Rethinking posttraumatic growth in psychologically healthy people: Experiences of growth and understanding psychological and psychosocial processes following earthquake exposure.

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Abstract

While it is well known that challenging and distressing events can negatively impact people's psychological and physical state, increasingly researchers have investigated how challenging or stressful life circumstances can lead to the phenomenon of posttraumatic growth: positive psychological or life changes that can emerge from potentially traumatic events. Posttraumatic growth has been investigated primarily with people displaying varying levels of posttraumatic stress symptoms and other psychopathology due to theories suggesting that resilience would prohibit posttraumatic growth. Few studies have examined growth amongst resilient people. The current study examined posttraumatic growth in a sample of sixty psychologically healthy people who experienced the Canterbury earthquake sequence of 2010-2011. The current study is a follow-up study that used thematic analysis to explore: (1) Whether posttraumatic growth is evident nine years after the Canterbury earthquake sequence and approximately six years after baseline assessment; and (2) What themes may facilitate the posttraumatic growth process in psychologically healthy people. Data were collected using semi-structured interviews. Thematic analysis revealed four themes describing participants' experiences of growth: *New possibilities*, *reappraisal of life and priorities, positive changes in self-perception* and *closer more meaningful relationships*. Themes describing posttraumatic growth provide evidence for research question one. Thematic analysis revealed three main themes and multiple subthemes that may facilitate the process of growth in psychologically healthy people: *Hardship, optimistic positive appraisal* and *people helping people.* Themes describing processes that may lead to growth provide evidence for research question two. Results of the current study provide insights about the experience of growth in psychologically healthy people and cognitive and psychosocial factors that may facilitate growth in resilient individuals.

Chapter one: Introduction

1.1 Defining and describing posttraumatic growth

Frightening and confusing events such as natural disaster, death of a loved one, or a serious injury or accident can impact people's physical, mental and emotional state (Lai et al., 2004). For example, posttraumatic stress disorder is particularly common in people who experienced natural disasters, with prevalence rates ranging from 13 to 95% (Lai et al., 2004). These estimates suggest that a substantial proportion of people who have experienced a potentially traumatic event are at risk for developing psychological dysfunction. However, these estimates also indicate that there is a proportion of people who do *not* develop severe psychological dysfunction. As such, the phrase "potentially traumatic" is used throughout to emphasise differences in people's responses after a challenging or otherwise potentially traumatic event. Research has investigated how challenging or stressful life circumstances can lead people to change, sometimes in radically positive ways (Calhoun & Tedeschi, 2006). Positive changes that can develop after a potentially traumatic event have been commonly referred to as 'posttraumatic growth,' a phenomenon first introduced in modern day research by Calhoun and Tedeschi (Calhoun & Tedeschi, 2004). By interviewing participants about their experiences with trauma Tedeschi and Calhoun developed the Posttraumatic Growth Inventory, a psychometric instrument used to assess positive life changes following a potentially traumatic event (Tedeschi & Calhoun, 1996).

Factor analysis of the Posttraumatic Growth Inventory revealed five factors closely related to posttraumatic growth: Greater appreciation for life, better relationships with others, increased strength, new possibilities and a greater sense of existential and spiritual life (Calhoun and Tedeschi, 2004). Posttraumatic growth has been referred to as a paradox since it does not only focus on the experience of growth, but these domains signify the notion that, "out of loss there is a gain" (Calhoun and Tedeschi, 2004, p.7). As such, posttraumatic growth

offers an alternative perspective on adaptation and functioning after challenging or potentially traumatic events. However, although these domains represent positive outcomes, this does not suggest that there is an absence of distress or hardship. Many people who have experienced challenges do report negative outcomes as well as negative psychological states.

1.1.2. Five Domains of Posttraumatic Growth

Following a potentially traumatic or challenging event some people may experience a greater appreciation of life and a greater appreciation for the things in their lives. As such, people may begin to pay attention to smaller aspects of life that may have been previously ignored (Kuenemund et al., 2016). Additionally, people may have a 'modified' sense of what is important, such as spending more time with family and friends or focusing on their personal relationships (Cordova et al., 2007). Therefore, some people may reprioritise how time and energy are spent, especially when a potentially traumatic event reinforces the frailty of life. Better relationships may also be experienced in the aftermath of a potentially traumatic event. This domain of posttraumatic growth describes the experience of more meaningful relationships with others. After a challenging event people may reach out for support from the community, family or friends.

Due to the experience of receiving support from others, people may feel closer with others, as well as feeling greater emotional connection within their interpersonal relationships (Wang et al., 2011). Better relationships are not restricted to the strengthening of existing relationships but may also include the development of new relationships, particularly those that may not have been considered before. This domain of posttraumatic growth further includes the decision to move on from relationships that are no longer perceived as beneficial or purposeful, making room for relationships that are viewed as more valuable (Calhoun and Tedeschi, 2004). Furthermore, some people may experience an increased sense of strength and self-confidence. A greater sense of personal strength refers to people's recognition of their own

capabilities, skills and strengths to cope with challenges and adversities (Mapplebeck et al., 2015). If a person has been proved capable at a time of stress this may boost a sense of strength and self-efficacy (Janoff-Bulman, 2004). Additionally, people may discover new possibilities for themselves in several areas that may not have existed had the traumatic event not occurred. People may change and pursue a more meaningful or purposeful career path, influenced by their own circumstances and difficulties (Staub & Volhardt, 2008). For example, a person who has lost a loved one due to an illness may decide to become a nurse to care for people experiencing similar hardship (Calhoun & Tedeschi, 2004). Posttraumatic growth in this domain may also involve developing new interests or habits that were not part of a person's life before the event occurred.

Furthermore, people may experience growth in the domain of spiritual or existential matters. For example, a newfound faith in a higher entity may be experienced or people's existing faith may be strengthened (Calhoun & Tedeschi, 2004; Mapham & Hefferon, 2012). However, growth in this domain is not restricted to religious faith, many people may experience growth in this domain by engaging with existential or philosophical questions or exploring their spirituality (Denney et al., 2011). For example, people may reflect on their interconnections with others, mortality and the meaning of life. Therefore, people may become more reflective in their views towards life, themselves and others.

1.1.3 Past conceptualisations of posttraumatic growth

Researchers have used several terms to describe posttraumatic growth such as perceived benefits (McMillen & Fisher, 1998), positive illusions (Taylor & Brown, 1998), stress-related growth (Park et al., 1996), flourishing or thriving (Abradio-Lanza et al., 1998), and construing benefits (Tennen et al., 1992). However, researchers suggest that posttraumatic growth accurately describes this phenomenon for several reasons. First, in contrast to what might be suggested by the term stress-related growth, the term posttraumatic growth focuses

more on the impact of potentially traumatic events and their role in the development of positive changes. It is not merely lower levels of stress that facilitate positive changes – the disruption that the event has caused plays a fundamental role in the development of growth (Tedeschi & Calhoun, 2004). Second, theorists suggest that posttraumatic growth may require a significant threat or shattering of people's world views that is accompanied by psychological distress, something that the terms thriving, and flourishing do not fully consider (Janoff-Bulman, 2004). Third, in contrast to the terms 'perceived benefits' or 'positive illusions,' it appears that people do experience real transformative life changes that go beyond an illusion or people's perceptions. A systematic review of qualitative studies exploring posttraumatic growth in people with a physical illness found that people who reported posttraumatic growth reported both positive and negative aspects of their experiences, suggesting they did not downplay or ignore their difficulties (Hefferon et al., 2009). Other researchers suggest that changes in behaviour reflect real reports of posttraumatic growth such as becoming more health conscious after an illness or changes in interest and hobbies (Mols et al., 2009).

Distinctions between posttraumatic growth and resilience have been heavily debated. Generally, posttraumatic growth and resilience are considered to be conceptually different. Resilience is typically defined using two key concepts: positive adaptation and adversity and has been defined as both a trait and a process that changes over time (Fletcher & Sakar, 2013). As a trait resilience represents several characteristics that enable people to adapt or cope with their circumstances, such as hardiness, optimism, problem solving, strong self-esteem and sense of coherence (Ying, et al., 2014). Hardiness refers to people's ability to maintain confidence, strength and control when confronted with challenging life events (Bonanno, 2004). Resilient people often view stressful situations as a challenge rather than a threat, decreasing the amount of distress, leading to a resilient outcome (Bonanno, 2004). Optimism refers to people having positive expectancies towards their circumstances and future despite

hardship (Souri & Hasanirad, 2011), while sense of coherence refers to people's ability to reflect on both positive and negative experiences in order to maintain psychological well-being (McGee et al., 2018). Therefore, resilient people acknowledge difficult and challenging circumstances but are able to manage hardship effectively. On the other hand, conceptualising resilience as a dynamic process implies that people's resilience is altered depending on the circumstance, time and age (Fletcher & Sarkar, 2013). In other words, resilience and its associated characteristics (hardiness, optimism, sense of coherence and problem solving) can be acquired at any point in time. Overall, both conceptualisations of resilience, whether a dynamic process or a trait, describe the ability to carry on with life after adversity with little psychological disruption (Park et al., 2008).

Unlike the aforementioned concepts, posttraumatic growth has been referred to as a meaningful *change* in people's lives that goes beyond coping with highly distressing or challenging circumstances (Tedeschi & Calhoun, 2004). The word 'growth' is what is important because posttraumatic growth refers to positive changes that were not present before the trauma or struggle occurred (Calhoun & Tedeschi, 2004). Therefore, people with posttraumatic growth who have experienced a potentially traumatic event have not merely coped with or survived the event but have experienced changes that are viewed as life changing and substantial. Posttraumatic growth is not simply carrying on with life as it once was – the improvement that some people experience can be quite life changing. Taken together, posttraumatic growth has a quality of transformation, with this transformation the defining line between resilience and posttraumatic growth.

1.2 Theories of posttraumatic growth

Since posttraumatic growth is a relatively new construct, the process of how growth occurs is not yet fully understood. Theories of posttraumatic growth suggest that major life challenges may act as a catalyst for positive personal change particularly if the event is highly

disruptive or distressing for people. Growth, however, does not occur directly from the event itself. Theories suggest that when people experience a challenging or potentially traumatic event this can have a strong impact on how people view the world, themselves and others (Tedeschi & Calhoun, 2004). After such an event people must engage in reflective thought processes that attempt to repair, restructure or rebuild people's general way of viewing the world and their place in it (Janoff-Bulman, 2004; Joseph & Linley, 2005). This process is suggested to create a sense of growth from challenging experiences (Park & Helgeson, 2006). Current models of posttraumatic growth focus heavily on the role of psychological dysfunction. None of the models to date adequately considers the influence of resilience or successful coping on the process of growth. The most developed models of posttraumatic growth are Tedeschi and Calhoun's (2004) and Janoff-Bulman's (2004) strength through suffering theories. These models were originally developed to understand posttraumatic stress symptoms and thus, do not consider cognitive and behavioural processes of people who are psychologically healthy or coping well following adversity. Additionally, Joseph and Linley's (2005) organismic valuing processing theory of growth further conceptualises how trauma-related information is processed and how this process leads to growth.

1.2.1 Calhoun and Tedeschi's model of Posttraumatic Growth (2004) and Janoff-Bulman's (2004) model of Strength Through Suffering.

Calhoun and Tedeschi's (2004) model focus on ruminative thought processes that take place after experiencing a challenging or otherwise potentially traumatic event. According to this model after a potentially traumatic event people's assumptive worldviews are threatened, accompanied by significant emotional distress. Such distress leads people to engage in ruminative thought processes to repair, restructure or rebuild people's general way of viewing the world, themselves and others. After people have rebuilt or modified their worldviews and have processed the trauma-related information, people are better able to accept that the world

has changed and thus, may experience posttraumatic growth. Tedeschi, Calhoun and Janoff-Bulman describe an additional component of posttraumatic growth called "psychological preparedness" that can be understood through the restructuring of people's assumptive world views. Psychological preparedness essentially represents people's sense of strength in the aftermath of successful restructuring (Janoff-Bulman, 2004). This component of posttraumatic growth emphasises that people may acknowledge that negative and disrupting events can occur but may not always believe that it will happen. As such, at a rational level people know misfortune can happen but at a deeper level this may not be fully accepted (Janoff-Bulman, 2004). For example, a person may know that illnesses can occur at any time but may believe they are unlikely to get ill. In other words, people are psychologically unprepared for adversity.

Psychological preparedness suggests that once people have constructed or rebuilt their schemata about the world, they are not only better prepared for future challenges, but, as a consequence, less distressed by them as well (Janoff-Bulman, 2004). Thus, psychological preparedness involves rebuilding sustainable assumptive world views that enable people to face other potentially traumatic or challenging events. Taken together, the rebuilding of people's assumptive world views incorporates the reality that other challenges may occur in future, but people are better able to withstand these potential difficulties. Acknowledging that misfortune is possible, life may be valued to a greater extent, or everyday experiences may be appreciated more than before.

1.2.2 Joseph and Linley's (2005) organismic valuing theory of growth through adversity

The organismic valuing process theory shares many similarities with Tedeschi, Calhoun and Janoff-Bulman's posttraumatic growth theories but further explains how trauma-related information is processed and how this process leads to growth. This theory states that people are naturally motivated to rebuild their assumptive world views after a potentially traumatic event (Joseph & Linley, 2005). The rebuilding process can only occur once people

have processed the new trauma-related information, referred to as the completion tendency (Joseph & Linley, 2005). How people process this information influences whether people will experience posttraumatic growth or psychological dysfunction (Joseph & Linley, 2005). There are two ways in which trauma-related information is processed: assimilation or accommodation (Joseph & Linley, 2005). Assimilation refers to the incorporation of new information into people's existing worldviews, whereas accommodation refers to changing existing worldviews to incorporate the new information (Joseph & Linley, 2005). If a person cannot process the information this may lead to psychological dysfunction. This theory states that after a person has processed and made sense of the trauma-related information, a person is more likely to find meaning in the experience.

Assimilation is thought to be less related to growth as this process is an attempt to *retain* or *preserve* pre-trauma schemata; the world view and the self do not change (Joseph & Linley, 2005). On the other hand, accommodation involves *modifying* previous worldviews where people see the world for how it is – a place where misfortune can happen and does happen – and not for how people want or think it should be. Both negative and positive accommodation can occur. If people develop a worldview that the world is unpredictable and unsafe, negative accommodation may occur which in turn, may lead to high levels of negative emotions. In contrast, positive accommodation involves finding meaning and value in the experience whereby people may re-evaluate and appreciate their relationships, their philosophy on life and their strengths (Joseph & Linley, 2005). As such, people who positively accommodate trauma-related information not only acknowledge that misfortune can happen but actively try to give meaning to the event, influencing the process of posttraumatic growth.

Overall, the theories discussed conceptualise processes contributing to posttraumatic growth. However, models of posttraumatic growth do not consider or adequately explain resilience or successful coping and its influence on the posttraumatic growth process. Further,

these models do not include individual differences that may facilitate the posttraumatic growth process. For example, optimism, extraversion, social support and other cognitive processes such as acceptance are not considered. More recent research, however, has indicated that such factors can influence the posttraumatic growth process (these will be discussed in more detail in section 2.1.4).

2.1 Quantitative findings on posttraumatic growth

2.1.2 Association between posttraumatic growth, resilience and posttraumatic stress

Since theories of posttraumatic growth suggest that psychological distress is vital for the process of growth, much of the existing research has been conducted with people displaying psychopathology, such as major depression or posttraumatic stress disorder. Previous research tends to show a positive association between posttraumatic stress disorder and posttraumatic growth. For example, posttraumatic growth has been found in people who have experienced a natural disaster with those reporting higher levels of distress due to fear, death and injury report more positive changes, such as increased personal strength, greater appreciation of life and greater family and community relationships (Fergusson et al., 2014; Jin et al., 2014). Reports of posttraumatic growth was also found among fire fighters experiencing psychological dysfunction in the domains of increased personal strength and greater appreciation of life (Leykin et al., 2013). These findings are consistent with Tedeschi, Calhoun and Janoff-Bulman's growth through adversity theories, indicating that higher distress leads to more experiences of growth. In contrast, other researchers have found a negative association between posttraumatic stress symptoms and posttraumatic growth, suggesting that people who report fewer posttraumatic stress symptoms may have higher levels of posttraumatic growth (Ye et al., 2018; Hall et al., 2010; Yi & Kim, 2014).

Other researchers have found no association between posttraumatic stress symptoms and posttraumatic growth suggesting posttraumatic stress symptoms and posttraumatic growth

may co-occur independently (Cordova et al., 2007; Grubaugh and Resick, 2007). Moreover, studies have shown a curvilinear relationship, whereby moderate levels of posttraumatic stress symptoms were associated with higher levels of posttraumatic growth (Kleim & Ehlers, 2009). For example, the highest levels of posttraumatic growth were, on average, reported by people who experienced moderate levels of distress and anxiety, rather than by people who reported higher levels (Eisma et al., 2019). Similar results have been found among people who experienced a terrorist attack, with those reporting moderate levels of posttraumatic stress symptoms experienced high levels of posttraumatic growth (Butler et al., 2005). Conversely, people who reported little or no emotional distress after the event reported less posttraumatic growth (Eisma et al., 2019). This suggests that posttraumatic growth is likely to occur when there is a balance between high and low levels of emotional distress and anxiety.

Research examining the association between resilience and posttraumatic stress symptoms tend to show a weak association with posttraumatic growth as resilience is primarily regarded as a protective factor against negative life events (Oginska-Bulik & Kobylarczyk, 2016; Zerach et al., 2013). People with high levels of resilience may not experience high levels of distress and, therefore, the event may not be challenging enough to activate cognitive processes that are necessary for growth (Tedeschi & Calhoun, 2004). Similar results have been found in a study examining the association between posttraumatic growth and resilience among people who were exposed to terror (Levine et al., 2009). High levels of resilience were associated with lower levels of posttraumatic growth (Levine et al., 2009). On the other hand, a positive relationship between resilience and posttraumatic growth in domains of new possibilities, relating to others and personal strength have been found among people who have lost a loved one (Ogińska-Bulik, 2014; Bensimon, 2012), firefighters (Ogińska-Bulik & Kaflik-Pierog, 2016), vehicle accident survivors (Nishi et al., 2010), woman struggling with infertility (Yu et al., 2014a), cancer survivors (Dong et al., 2017; Wilson et al., 2014) and

people who experienced an earthquake (Smith et al., 2017). These results are in contrast to what is suggested by the growth through adversity theories, suggesting that posttraumatic growth can exist among people who are coping well after adversity.

2.1.3 Posttraumatic growth over time

Posttraumatic growth is conceptualised as a process that changes over time (Tedeschi & Calhoun, 2004). Time since the event and reports of growth is an area of research that has received less attention. Researchers have argued that short-term growth may reflect a coping strategy used to reduce distress after experiencing a challenging circumstance, while posttraumatic growth in the longer term may reflect *real* positive change (Zoellner & Maercker, 2006). There is little research examining posttraumatic growth over time, both quantitatively and qualitatively. Some studies, however, have found long-term reports of posttraumatic growth. Marshall et al. (2015) found that posttraumatic growth was stable in people who experienced an earthquake one year after baseline assessment, particularly in domains of personal strength and better relationships. Similarly, different trajectories of posttraumatic growth have been found among adolescents following the Wenchuan earthquake (Zhou et al., 2019). Participants reported high levels of posttraumatic growth (76.9%) 2.5 years after the earthquake, while others reported low levels of posttraumatic growth, suggesting the experience of growth may change over time.

In a follow-up study, posttraumatic growth was found in breast cancer patients 5-15 years after diagnosis (Lelorain et al., 2010). Greater appreciation for life (87%) and positive changes in the self, such as viewing themselves as stronger (86.3%) and more compassionate (87%) was most commonly reported (Lelorain et al., 2010). Posttraumatic growth was also found in adolescents diagnosed with cancer six months and approximately two years after baseline assessment, with adolescents reporting growth in the domains of greater appreciation for life, better interpersonal relationships and increased strength (Husson et al., 2017).

Moreover, high levels of posttraumatic growth were found in transplant survivors nine years after baseline assessment reporting the highest levels of growth in the domains of greater appreciation for life, new possibilities, increased strength and better relationships (Tallman et al., 2010). Research has also found an association between the degree of trauma exposure and posttraumatic growth (Michélsen et al., 2017; Ma et al., 2019). A study investigating posttraumatic growth among people who experienced a tsunami, reported higher levels of growth six years following the disaster if they experienced a combination of exposures, such as loss of a loved one, loss of property, illness and injury (Michelsen et al., 2017). This suggests that additional distressing events that are perceived as manageable may facilitate the posttraumatic growth process and maintain the experience of growth over time. However, research has also shown that posttraumatic growth may decrease over time. In a longitudinal study with Israeli war veterans found that reports of growth declined over a five-year period (Dekel et al., 2012). The experience of growth, therefore, may increase, decrease or remain constant over time.

2.1.4 Factors facilitating the process of posttraumatic growth

Studies have identified psychological and psychosocial factors that may facilitate the process of posttraumatic growth. Having a sense of humour, sense of coherence and an optimistic outlook on life were associated with changes in self-perception in firefighters exposed to a range of potentially traumatic events, such as witnessing death and saving human life (Ogińska-Bulik & Kobylarczyk, 2016), characteristics that resilient individuals commonly possess. Optimistic appraisal was also found to be related to higher levels of personal growth among men experiencing a chronic disease (Kraaij et al., 2008). Similarly, Dong et al. (2017) found a positive association between resilience and posttraumatic growth, suggesting that resilient people are more likely to positively interpret challenging and stressful situations

which, in turn, may lead to posttraumatic growth. Optimism, therefore, may be related to posttraumatic growth through the influence it has on how people cognitively process an event.

People who are optimistic may also be better able to focus on important matters and spend less time worrying about aspects of a situation they cannot control (Aspinwall et al., 2001). High self-efficacy, another characteristic of resilient individuals, has been found to be related to growth (Kraaij et al., 2008; Dong et al., 2017). In a study of people diagnosed with cancer, those who reported high beliefs in their ability to cope with challenging circumstances were better able to find positive changes in their relationships, acknowledge their own strengths, and appreciate life in more ways than before (Dong et al., 2017). Similarly, Lotfi-Kashani et al. (2014) and Yu et al. (2014b) found a direct association between self-efficacy and posttraumatic growth among patients with cancer. It is suggested that people with high self-efficacy experience more positive affect that would, in turn, facilitate the posttraumatic growth process (Lane et al., 2002).

Resilient people have been found to score highly on the extraversion and openness to experience personality dimensions (Campbell-Sills et al., 2006), both of which have been found to be associated with posttraumatic growth (Ercan, 2017). Extraversion was directly associated with posttraumatic growth in a sample of people who experienced the 2008 Wenchuan earthquakes (Jia et al., 2015). Extraversion involves positive emotions and the ability to maintain close interpersonal relationships (Ercan, 2017). As such, it is suggested that extraversion may have an indirect association with posttraumatic growth through social support (Jia et al., 2015). Extraverts are more likely to reach out for help and to support others around them which may help them process trauma-related information, thus facilitating the posttraumatic growth process (Jia et al., 2015; Calhoun & Tedeschi, 1998). Therefore, social support can provide an environment for disclosure, and allow people to adopt new perspectives that are necessary to modify people's worldviews (Tedeschi & Calhoun, 2004). Adequate

levels of social support has been found to be positively associated with posttraumatic growth, evidenced by research on those who have experienced sexual assault (Frazier et al., 2004), bereavement (Cadell et al., 2003) and a chronic illness such as cancer (Danhauer et al., 2013). Specifically, social support was found to be associated with growth in domains of relating to others, new possibilities and personal strength (Wolchik et al., 2008). In contrast, a lack of social support is generally associated with distress and poorer adjustment leading to lower levels of posttraumatic growth (Peter-Hagene & Ullman, 2014).

Openness to experience was found to be an important predictor of posttraumatic growth (Wang et al., 2012). Openness involves being interested in new situations, ideas and experiences (Wang et al., 2012). People who are open to new experiences tend to manage the uncertainty of life events effectively and accept change rather than resist it (Zoellner et al., 2008). It is, therefore, suggested that people who are high in openness are better able to cope with potentially traumatic events and may be more willing to reflect on the impact of the event on their own lives (Zoellner et al., 2008). In a study examining posttraumatic growth among people who experienced three distinct types of events (motor accident, natural disaster and a death of a loved one), found that openness to experience predicted posttraumatic growth in the domains of better relationships, increased strength and new possibilities (Karanci et al., 2012). It may be expected that people who are open to the experience are more likely to cognitively process challenging or distressing events.

Cognitive processes such as gratitude has been found to be associated with posttraumatic growth. Thus far, gratitude has received little attention in post-trauma research, however, researchers have noted that many people express grateful cognitions after a potentially traumatic event such as a traumatic injury (Chun & Lee, 2013). A study examining posttraumatic growth following a campus shooting found those who reported gratitude reported higher levels of posttraumatic growth in comparison to those who did not report a sense of

gratitude (Vieselmeyer et al., 2017). Gratitude was also positively associated with posttraumatic growth in people who lost a parent, particularly in the domain of greater appreciation for life (Greene & McGovern, 2017). People who viewed themselves as grateful or lucky when considering their circumstances, reported a newfound belief that life and relationships with others are precious (Greene & McGovern, 2017).

Similarly, gratitude reported by cancer patients was associated with all posttraumatic growth dimensions – greater appreciation for life, new possibilities, better relationships and spiritual change (Ruini & Vescovelli, 2013). These results are consistent with the scarcity heuristic explanation, whereby the reminder of death or loss may encourage people to place higher importance on interpersonal relationships and their own lives (King et al., 2009). Cognitive coping strategies such as acceptance has been found to facilitate the posttraumatic growth process. A study examining posttraumatic growth in people who were sexually assaulted found that acceptance predicted posttraumatic growth (Cole & Lynn, 2011). In contrast, emotional venting and avoidance of distressing circumstances have been found to be associated with low reports of posttraumatic growth (Kashdan & Kane, 2011). Acceptance has been referred to as an emotion-focused coping strategy that enables people to make sense of the event and find meaning in challenging circumstances (Vishnevsky et al., 2010). This suggests that acceptance may play an integral role in the experience of growth following a potentially traumatic event.

2.2 Qualitative findings on posttraumatic growth

Alongside quantitative research, qualitative research provides evidence of posttraumatic growth in a range of populations reporting high and low levels of psychological distress, experiencing different types of trauma. For example, research has explored themes of posttraumatic growth among people experiencing a traumatic illness such as cancer (Morris et al., 2012). Posttraumatic growth among cancer survivors was reported in the form of increased

compassion for others struggling with a similar illness, appreciation for life, change in priorities, increased personal strength and more engagement in health-related activities, such as improved nutrition and increased exercise (Morris et al., 2012). Likewise, several studies have reported the development of improved health behaviours following the diagnosis of a life-threatening illness (Coward & Kahn, 2005; Pakenham, 2007; Manuel et al., 2007). People who experience a traumatic illness may recognise that health is delicate, and life is fragile and may re-evaluate or improve their health behaviours (Morris er al., 2012).

Similar themes of posttraumatic growth have been identified by Shakespeare-Finch and Armstrong (2010), who found people who experienced the loss of a loved one reported growth in domains of appreciating life and improved relationships with others. The appreciation of life domain has also been reported in studies with combat veterans, along with feeling more connected with others and increased personal strength (Palmer et al., 2017; Feder et al., 2008). Additionally, a study exploring posttraumatic growth in a population who experienced the 2007 earthquake in Peru found participants had developed a stronger sense of life purpose, feeling more connected to family members, friends and the community (Mohr, 2014). On the other hand, people who have experienced sexual trauma tend to report greater empathy for others in similar situations but report lower connection with others (Shakespeare-Finch & De Dassel, 2009; Frazier et al., 2001). Loss of trust and break down within personal relationships may explain the lower level of growth within the better relationships domain. In contrast, bereavement, illness or combat may prompt people to reach out and focus on their relationships with others, perhaps because of their mutual confrontation with death and the realisation that life is short (Shakespeare-Finch & Armstrong, 2010).

It is clear there is a strong link between trauma, psychological distress and posttraumatic growth. People who have experienced highly distressing circumstances and psychological dysfunction demonstrate positive outcomes despite adversity. However,

posttraumatic growth among psychologically healthy people has rarely been investigated. This may be because current theories conceptualise people who do not present with major distress as less likely to engage in ruminative cognitive processing (Janoff-Bulman, 2004). Therefore, it is assumed that psychologically healthy people cannot experience posttraumatic growth. However, as previously discussed, some quantitative studies show a positive association between resilience and posttraumatic growth.

A study by Smith et al. (2017) is one of the very few qualitative studies to investigate posttraumatic growth in a group of psychologically healthy, resilient people. The study examined posttraumatic growth in a group who experienced the Canterbury earthquake sequence of 2010-2011. Several themes were identified, such as improved relationships with others, feeling stronger in oneself, greater appreciation of life, and spiritual change (Smith et al., 2017). An additional theme reflecting posttraumatic growth after a community-wide trauma was also identified: a greater sense of community. The study found that many themes relating to posttraumatic growth were similar to those reported by people who experienced other types of trauma, such as an illness or bereavement, including improved relationships, greater personal strength, greater appreciation of life, and changes in spirituality and in existential thought (Smith et al., 2017). Smith's study, therefore, provided preliminary evidence that posttraumatic growth can occur in psychologically healthy people who have experienced a potentially traumatic event.

Moreover, this study showed that these positive changes are similar to those experienced by people with psychological dysfunction as a result of trauma. Another study that is related to the Canterbury earthquake sequence found positive changes were reported by nurses who did not experience severe psychological dysfunction (Johal & Mounsey, 2016). Positive changes included increased personal strength, increased value placed on relationships, valuing the experience, clarification of values and priorities and viewing themselves as lucky

(Johal & Mounsey, 2016). These findings raise several questions around the theories of posttraumatic growth, as it is evident that psychological dysfunction, or substantial ongoing distress, are not necessary for posttraumatic growth to occur.

2.3 Current study aims and research questions

Further research is required to understand experiences and processes of posttraumatic growth in psychologically healthy people. Only two studies, to my knowledge, have investigated posttraumatic growth among people who are coping well following adversity. The current study aims to contribute to the small but growing body of research on positive changes among psychologically healthy populations. These people require further attention as they play an important role in relief and rebuilding following challenging or traumatic events and offer a new perspective on the process of posttraumatic growth. The current study is a follow-up of the original study of earthquake exposed resilient individuals (Smith et al., 2017) originally assessed in 2013-2014, two-to-three years after the Canterbury earthquake sequence of 2010-2011. The current study is a qualitative design that captures the personal narratives of people who self-identified as coping well despite moderate-to-high exposure to earthquakes, approximately six years after baseline assessment and nine years after the Canterbury earthquake sequence. The current study, therefore, aims to provide further depth about posttraumatic growth in a psychologically healthy sample and contribute to knowledge on processes of growth. The current study explored two areas of interest:

- Whether posttraumatic growth is evident in a sample of earthquake affected but psychologically healthy people nine years after the Canterbury earthquake sequence.

- What themes may facilitate the posttraumatic growth process in psychologically healthy people.

Method

3.1 Participants

Participants for the current study were 60 psychologically healthy Canterbury residents aged between 18 and 65. This group was resilient in spite of moderate-to-high exposure to earthquake related events such as physical injury or illness, death or injury of a loved one, witnessing falling buildings or seeing bodies, loss of income or disruptions at work and school, and problems with housing caused by the earthquakes and property loss. Participants self-identified as coping well, had not sought or received treatment for earthquake related distress, and were assessed to be without psychiatric diagnosis, including posttraumatic stress disorder, anxiety disorders or major depression despite moderate-to-high exposure to the Canterbury earthquake sequence of 2010-2011.

3.2 Recruitment

Participants for the current study were previously recruited as part of the original study of resilient individuals, which occurred over the course of 13 months, from January 2013 to February 2014, two-to-three years after the Canterbury earthquake sequence. Participants (n = 101) were originally recruited in response to articles and community notices in local Canterbury newspapers, and via word of mouth. Potential participants were screened by telephone to determine that they met inclusion criteria. Inclusion criteria for the resilient group were moderate-to-high exposure to the earthquakes, including events such as physical injury or illness, death or injury of a loved one, witnessing falling buildings or seeing bodies, loss of income or disruptions at work and school, problems with housing caused by the earthquakes

or property loss. Exclusion criteria were developing a psychiatric illness due to the earthquakes or receiving earthquake-related counselling. Participants attended the Clinical Research Unit at the University of Otago, Christchurch, where it was confirmed that inclusion criteria were met. As part of the informed consent process in the original study, participants indicated whether they consented to being contacted for future studies. Participants for the current study were recruited as part of the follow-up study assessed between July 2018 and March 2020 in Christchurch, New Zealand, approximately six years after baseline assessment. Participants who consented to being approached in future were recontacted for the current study. Recruitment of participants involved a member of the research team contacting them via telephone, and then emailing an information sheet explaining the study.

Participants were given the opportunity to discuss the study with a member of the research team, ask questions and contact support people if needed. If participants in this group developed a diagnosed mental disorder since the original resilient assessment, they were not unable to participate in the current study. Exclusion criteria included current serious alcohol misuse or dependence, comorbid endocrinological, neurological or chronic medical conditions, pregnancy, previous serious head injury, or taking medications that may interfere with cognitive functioning. Of the 101 original participants, 60 agreed to participate in the current study.

3.3 Ethics approval

Human Ethics approval for the current study was obtained from the Upper South Island Regional Ethics Committee and consultation with Iwi Maori occurred through the University of Otago, Christchurch.

3.4 Procedure

Participants who agreed to involvement in the current study and appeared eligible, were invited to the Department of Psychological Medicine, University of Otago, Christchurch, to

confirm eligibility and to complete the informed consent process with a research assistant. Open question interviews, questionnaires and psychological assessments were completed. Participants received a $50 Motor Transport Association voucher to compensate for their time and travel.

3.4.1 Questionnaires/Psychometric assessments.

Participants completed a range of assessments: demographic information such as age, gender, ethnicity, education, occupation, relationship status and suburb; psychometric assessments such as a structured clinical interview using the Mini-International Neuropsychiatric Interview to determine psychiatric morbidity; self-report questionnaires such as the Depression Anxiety Stress Scale, and the Connor-Davidson Resilience Scale. These assessments will be used in the current study to describe emotional and psychiatric health, as well as to provide an indication of participants' levels of resilience. Assessments were conducted by assessors trained in all aspects of the research. Other self-reported questionnaires were completed that will not be included in the current study.

3.4.2 Open question interview: earthquake narrative.

Participants took part in an individual interview where one research assistant used prompts and open ended questions, asking participants to describe their experience of the Canterbury earthquake sequence and the related effects of those earthquakes. These effects included both positive and negative outcomes. Including prompts about negative and positive aspects of their experiences ensured that participants were not biased to favour one or the other. Participants were further prompted to consider whether they identified aspects of growth, such as changes in perspective or personal strength, and were asked to describe these changes. Interviews lasted 20-60 minutes. Types of questions asked included, "what changes have there been for you since the earthquakes?" "have there been any positives that have come out of the earthquakes for you?" "have there been any negatives that have come out of the earthquake for

you?" and "have your perceptions or views on anything changed since the earthquakes?" As the interviews were semi-structured, participants could describe their experiences in their own way and could further elaborate on important aspects of their experiences not included in the interview questions. Interviews were digitally audio recorded, downloaded, and transcribed verbatim. To ensure participant confidentiality, identification numbers were used to label transcripts and audio records. Data collected as part of the earthquake narratives are the focus for the current study.

3.5 Descriptive Measures

3.5.1 Mini-International Neuropsychiatric Interview. The Mini-International Neuropsychiatric Interview (MINI; Hergueta et al., 1998) English version 5.0.0 is a structured diagnostic psychiatric interview based on the Diagnostic Statistical Manual (American Psychiatric Association, 1994). The MINI assesses a range of psychiatric disorders: posttraumatic stress disorder, adjustment disorder, anxiety disorders, mood disorders, alcohol and substance use disorders and eating disorders. The MINI was used in the current study to describe participants' current and lifetime diagnoses in the current study.

3.5.2 Depression Anxiety Stress Scale. The Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) consists of 21 items with seven items for each emotional state (depression, anxiety and stress), used to determine levels of depression, anxiety and stress symptoms in the past week. Items are rated from 0 = *did not apply to me at all* to 3 = *applied to me very much, or most of the time*. Higher scores reflect greater emotional distress. An example of an item from the depression subscale is '*I couldn't seem to experience any positive feeling at all.'* An example of an item from the anxiety subscale is '*I felt scared without any good reason.'* An item from the stress subscale is '*I found myself getting agitated.'* The DASS-21 was used in the current study to provide an indication of participants' levels of depression, anxiety and stress.

3.5.3 Connor-Davidson Resilience Scale. The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) consists of 25 questions to measure levels of resilience. Questions are rated from 0 = *not true at all* to 4 = *true nearly all the time*. Items are summed to create a total score ranging from 0-100, with higher scores reflecting higher levels of resilience. The scale assesses characteristics of resilient individuals such as commitment, viewing change, adaptability to change, having a realistic sense of control, and developing goals to meet difficulties. Examples of questions in the CD-RISC are '*I am able to adapt when changes occur*,' and *'I am not easily discouraged by failure.'* The CD-RISC was used in the current study to provide an indication of participants' levels of resilience.

3.6 Materials

Otter transcribing software was used to assist with the transcription of audio recordings. NVivo qualitative data software (QSR International NVivo, 2020, Version 12) was used to organise, facilitate and store transcribed data.

3.7 Data analysis

3.7.1 Qualitative data analysis

Qualitative research is a useful method for exploring the nature of the phenomenon of interest and is used to answer questions about meaning, perspective and experiences of participants (Hammarberg et al., 2016). As such, qualitative analyses are in contrast to quantitative methods which use numerical or factual data to answer the research question (Hammarberg et al., 2016). Qualitative research may reveal different ways people experience posttraumatic growth that are not captured by standardised tools used in quantitative research, such as the Posttraumatic Growth Inventory. Qualitative research can also provide further insight and detail in understanding the underlying mechanisms or processes of posttraumatic growth. Qualitative methods, therefore, take into consideration people's unique experiences and the different ways people may express or perceive the phenomenon of interest. As such,

qualitative methods were appropriate for the current study due to its exploratory nature and aim of understanding posttraumatic growth several years after the Canterbury earthquakes.

Thematic analysis, a method for analysing, identifying and reporting patterns and themes within qualitative data (Boyatzis, 1998), was used to analyse participants' open-ended responses about their experiences of the Canterbury earthquake sequence and to explore posttraumatic growth nine years post-earthquakes and approximately six years after initial assessment. Due to the flexibility of this research method, thematic analysis can provide a rich and detailed account of the data (Braun & Clarke, 2006). Thematic analysis allows for findings to emerge inductively, meaning the themes are closely related to the raw data rather than to predetermined ideas or theories (Boyatzis, 1998). Central to the current study is understanding people's experiences of posttraumatic growth several years after the Canterbury earthquake sequence. Therefore, thematic analysis is a useful method for examining the perspectives of different participants and uncovering detailed and useful insights. For the current study, thematic analysis was based on qualitative methods established by Nowell et al. (2017) and Braun and Clarke (2017) for analysing, identifying, coding, and describing themes. Nowell et al.'s (2017) and Braun and Clarke's (2006) step-by-step guide to conducting a thematic analysis was followed to structure data analysis.

3.7.2 Thematic Analysis process

Prior to analysis, 16 of the 60 audio recordings (raw data) of participants' responses were transcribed verbatim. Otter transcribing software was used to assist the transcription of audio recordings. One at a time, 16 audio recordings were downloaded onto Otter where the software automatically transcribed the recordings. Once completed, each transcript was converted into a Microsoft Word document. Due to possible errors of the transcribing software the primary analyst read through the completed transcripts while listening to the audio recordings to identify and correct errors. Changes to the transcripts were made on the Microsoft

Word document and all transcripts were saved onto a password protected computer. Speech dysfluency, such as repeated or restarted sentences, fillers (such as 'um' and 'aah'), corrected sentences or words, and false starts (words and sentences that ended part way through) were removed prior to analysis. Following transcription, 16 transcripts were read and re-read several times prior to the coding process to actively engage with the data and create an initial understanding of its content. Re-reading the entire data set allowed for the identification of possible themes and initial meanings and patterns within the data. These initial thoughts and observations were documented to later guide the coding process.

After gaining a sense of the data, the primary and secondary analysts independently analyzed 10 transcripts to identify preliminary codes, patterns or similarities within the transcripts. First, transcripts were coded on physical copies where any text that was deemed interesting or relevant to the research questions was underlined and given a code consisting of a word or sentence to condense data into identifiable topics. During this stage of the analysis, it was important to note solely what participants described rather than interpreting and analysing pieces of text. This was to ensure the initial coding process was data-driven. Primary and secondary analysts met weekly to discuss the initial codes for each transcript to ensure consistency between analysts. These initial codes lead to preliminary ideas about codes that later guided development of main themes and subthemes.

After the first 10 transcripts were coded and a list of codes across the 10 transcripts had been identified, the next phase involved sorting and ordering the relevant coded data into common themes. Each initial code was written on a post-it-note and was grouped according to similarity or meaning. This phase of the analysis was more interpretive than the initial coding process as codes were organised in more detail. Common themes were identified by combining or grouping ideas or pieces of text initially coded. Similar codes were grouped together, and subthemes were created where specific themes fitted within a larger theme. Codes that did not

fit into any of the common themes and subthemes were placed under a “miscellaneous” theme to be discussed during the reviewing process. At the end of this stage all codes were organised into broader themes that were relevant to the phenomenon of interest. Each common theme was then written on a post-it-note and organised to create a visual map reflecting themes present in the data. Analysts then discussed the emerging themes from the 10 co-analysed transcripts. For themes that one analyst had identified but the other had not, analysts discussed their reasoning for creating a theme and whether the theme should be included or discarded. An additional six transcripts were then independently analysed by both analysts to determine whether there were new themes that had not occurred in the first 10 transcripts. Saturation had been reached after the analysis of sixteen transcripts. Analysts then discussed the visual map to determine whether there were themes that could be included or if further aspects of a theme needed to be considered. The map of themes was adjusted until a consensus was reached, and the overall meaning of each theme was accurately captured. Each code was given a name, a description and information about distinctions between themes. Grouping data according to common themes provided detailed examples of each theme.

After main themes and sub-themes were developed manually, transcripts were imported into the software NVivo. This software aided the storing and organisation of data and all 16 transcripts were coded on NVivo using themes that had emerged during coding of the physical copies. Next the primary and secondary analysts reviewed the coded data (pieces of text) for each theme and considered whether they appeared to form a consistent pattern related to the research questions and whether the text under each theme appropriately described the theme. The primary analyst discussed the coding structure and explained what each theme described, while the secondary analyst provided feedback on whether other aspects of the themes needed to be considered or whether codes needed to be reorganised within the themes; some pieces of text appeared to fit better under another theme. By the end of this stage, the primary and

secondary analysts came to an agreement about where these pieces of text best fit and whether the codes accurately described each theme.

Once all themes were reviewed, refined and rearranged with the secondary analyst, themes were further analysed and defined. A concise description of what each theme represented was written; this identified the story that each theme told (Braun & Clark, 2006). Additionally, it was considered how each theme explained the overall story of the data set in relation to the research questions. This stage of analysis was about making sense of the data, to fully understand its overall content. This process contributed towards the preparation for writing the results of the thematic analysis.

The last stage of the analysis was the reporting of results. The Consolidated Criteria for Reporting Qualitative Research (Tong et al., 2007) was used to guide the write-up process. A concise description of each main theme and subtheme was presented, followed by examples from participants' responses. These examples were presented to aid the reader's understanding and interpretation of the specific themes related to the research questions. Examples of participants' responses were also presented to illustrate the participants' story that goes beyond the provided description for each theme (Braun & Clarke, 2006).

3.8 Establishing trustworthiness

Several criteria have been developed to assist researchers with trustworthiness in qualitative research. Lincoln and Guba's (1985) criteria are used to demonstrate trustworthiness in the current study. Member checks, also referred to as investigator triangulation, is one strategy to achieve credibility in qualitative research. Credibility addresses the fit between participants' descriptions and the researcher's interpretation of them (Nowell, 2017). To achieve credibility in the current study, two researchers independently analysed each transcript included in the analysis. Weekly meetings were held to allow for peer debriefing to examine how the researchers' meanings and ideas were developing as they worked through the

data. The primary researcher's interpretation of the data was compared with the secondary researcher's interpretations to determine agreement or disagreement between analysts when interpreting and coding the data, minimising subjective interpretation of the data by the primary analyst. Credibility was also increased by engaging in persistent observation by which the primary researcher read and re-read the data, analysed them, conceptualised them and revised the concepts for each theme accordingly. To reduce threats to dependability (akin to reliability in quantitative research), the primary researcher ensured that the research process was clearly documented. For example, describing how the data were collected, how the categories/themes were derived and how decisions were made throughout the analysis process.

To increase confirmability (akin to objectivity in quantitative research), the primary researcher was aware of personal biases that may influence the analysis process. Personal biases are discussed in more detail below in the section, the role of the researcher, as it is an integral part of establishing trustworthiness in qualitative research. Increasing confirmability led to transferability (akin to external validity in quantitative research), where the documentation of the research process and descriptions of participants provides other readers with information to determine whether findings of the current study can be applied to other settings (Boyatzis, 1998). For example, descriptive data of participants, the context or setting in which the research was carried out, sample size, interview procedure, inclusion and exclusion criteria were provided.

3.9 The role of the researcher

Qualitative research is recognised as an interpretative research method whereby researcher biases and beliefs, can influence analysis of data (Lazenbatt & Elliot, 2005). Having an awareness of personal biases is particularly important as the researcher has an active role in identifying patterns and themes within the data set. As the primary analyst, I acknowledged my own influences on the analysis process. I have had my own challenges and have experienced

personal changes following adversity, such as a sense of strength and confidence to cope with such events. I have also witnessed others who have experienced positive changes after facing adversity. Having experienced positive changes myself and observing positive changes in others, I have an optimistic view that challenging, or potentially traumatic life events can lead to many positive possibilities, identifying with reports of posttraumatic growth. I also recognised that I had been through the Canterbury earthquakes myself and thus ensured that I put aside my own experience of the earthquakes to fully understand the experience of others.

Additionally, during analysis I acknowledged that I related to many of the participants' stories which may have influenced my approach during analysis. Therefore, during the qualitative analysis it was important for me to acknowledge that my own experiences and attitudes could have the potential to influence the analysis process. As such, it was important to note only what the data explicitly stated and ensured that interpretation of data was not based on my own experiences or opinions. Acknowledging how these personal aspects can influence data analysis allows the researcher to become flexible and reflective. Being flexible and reflective during the analysis process not only permits researchers to monitor biases but also encourages researchers to consider alternative interpretations of the data (Elliot & Lazenbatt, 2005). To minimize personal biases on the interpretation of the data and maintain objectivity in the current study, another analyst was introduced during the coding process and forming of themes. Frequent meetings were held to discuss reasons for coding a piece of text and to ensure consistency between the primary and secondary researchers' interpretations. Meetings held by the primary and secondary analysts also allowed for the discussion of different interpretations that may not have been initially considered by one or the other analyst.

Results

Participants had a mean age of 56.47 years, with the majority of the sample being female, with 41 females and 19 males. Participants were predominantly married or in a partnership (78.3%), and of Pākehā/New Zealand European ethnicity (88.3%). The sample mostly had either a Bachelor Degree/Certificate (38.3%), or a Postgraduate Degree (35.0%), and were mostly full time or part time employed (78.3%).

Table 2

Demographic characteristics of the resilient sample (n = 60)

Variable	*n*/*M*	%/*SD*
Age	56.47	
Gender		
Female	41	31.7%
Male	19	68.3%
Relationship status		
Single	7	11.7%
Partnership	47	78.3%
Divorced/separated	2	3.3%
Widowed	2	3.3%
Other	2	3.3%
Ethnicity		
NZ European	53	88.3%
Māori	1	1.7%
Cook Island Māori	0	0%
Asian	1	1.7%
Other	6	10.0%
Educational achievement		
1-4 years of high school	5	8.3%
5-6 years of high school	3	5.0%
Trade or technical certificate	8	13.3%
Bachelor degree/certificate	23	38.3%
Postgraduate degree	21	35.0%
Occupation		
Student	0	0%
Employed	47	78.3%
Unemployed	0	0%
Home responsibilities	1	1.7%
Retired or not working by choice	12	20.0%
Sickness or invalid benefit	0	0%

Table 3 presents clinical characteristics of the resilient sample. The results show that 5.0% reported current alcohol dependence; 3.3% reported major depressive disorder within their lifetime; 5.0% reported current generalised anxiety disorder; and 1.7% reported bulimia nervosa in their lifetime. Mean scores were reported for depression (M = 2.33), anxiety (M = 1.47), stress (M = 6.23) and resilience (M = 76.82).

Table 3

Clinical characteristics for the resilient sample (n = 60)

Variable	*n/M*	*%/SD*
General psychopathology		
Depression, Anxiety, Stress Scale		
depression	2.33	3.0
anxiety	1.47	2.49
stress	6.23	6.89
Resilience		
Connor-Davidson Resilience Scale	76.82	10.32
Mini International Neuropsychiatric Interview		
Psychiatric history		
Posttraumatic stress disorder		
Lifetime	0	0%
Current	0	0%
Panic disorder		
Lifetime	0	0%
Current	0	0%
Alcohol dependence		
Lifetime	0	0%
Current	3	5.0%
Major depressive episode		
Lifetime	2	3.3%
Current	0	0%
Generalised anxiety disorder		
Current	3	5.0%
Adjustment disorder		
Current	0	0%
Anorexia nervosa		
Lifetime	0	0%
Current	0	0%
Bulimia nervosa		
Lifetime	1	1.7%
Current	0	0%

4.2 Final results from thematic analysis

A total of four main themes and 13 subthemes emerged from the interview data. The four main themes were: *Posttraumatic growth, hardship, optimistic positive appraisal and people helping people.* Posttraumatic growth was expressed as the themes *new possibilities, reappraisal of life and priorities, positive changes in self-perception, and more meaningful relationships*. Several other subthemes under*, hardship, optimistic positive appraisal and the theme people helping people* were linked to experiences of posttraumatic growth. These subthemes do not reflect direct experiences of posttraumatic growth but may facilitate the posttraumatic growth process in psychologically healthy people.

4.2.1 Posttraumatic growth

4.2.1.1 New possibilities

Participants described *new possibilities* for Christchurch and themselves after the earthquakes. Participants described these opportunities in a positive light and often stated that it would not have been possible without the earthquakes. Therefore, these opportunities were described as something particularly beneficial that came out of the earthquakes and often included a psychological component where participants described these changes as exciting and enjoyable. For example, participants described opportunities for Christchurch to be built in new and exciting ways.

> C113: *There are lots of positives. We're rebuilding. There aren't many cities that have the ability to wipe out 75-80% of the CBD and build from scratch. We are doing things better and we have this fantastic new CBD. It's much better for walking and all the new laneways are freaking awesome. The new promenade down the river from the hospital through the Margaret Mahey [playground] is fantastic. It is a great place for playing with scooters. So, you know, it is actually quite exciting to see what is happening in the city. There's been a pile of new*

bank buildings open this new year as well as new eateries and retail shops. That sort of seven to eight years on from the earthquakes is when the city really started to come back and we can see the city for itself.

C130: *Looking back on it now, I can see the city coming out of the earthquakes and it is a wonderful new city. I'm very energized by it.*

One participant described the rebuilding of the city as a gift back to the people and finally being able to celebrate gains that can be collectively shared by people from Christchurch.

C166: *If you look around the city now, you can see the freshness and the exciting spaces. We have the new library and the Town Hall opening next year and it's like all these things are gifts back to the city and the people. The reclaiming and renewal of the city I have really enjoyed and it's been fabulous. You notice different things that come up, so really interesting watching everyone adapt. We have moved to a point where we can start to really celebrate those real gains. I'll probably cry when I go to the Town Hall because it will be just so wonderful to have it back.*

Other participants saw possibilities for rebuilding or repairing their homes. Opportunities to rebuild a new house was described as fantastic, exciting and a home that will be long-lasting and better suited.

C166: *My friend persuaded me to build and he said the original site is a fantastic site to build on. So, we sat down with a cup of coffee and a pen and paper and now I'm going to build. Ultimately I can build a house that the site deserves. It won't be posh, it will be very simple but it will have good access and it will be somewhere I can live in my old age.*

C103: *We didn't have any insurance nightmares. No, in fact, it worked out extremely positively for us. We were renting at the time but after the earthquakes Habitat For Humanity advertised around in a number of schools that they were looking for families that could afford to buy a house. We ended up getting accepted as a Habitat Family. So, we helped build our own house and other houses and none of it would have happened without the [February] earthquake. So, we are now living in a house that we're buying with three bedrooms and is a brand new build. So for us the earthquake has impacted our lives in an extremely positive way.*

Additionally, some participants described becoming more financially stable because of the earthquakes, viewing themselves as better off than before.

C145: *Sometimes I think, was the struggle for seven-to-eight years for this house worth it? And if you say that the earthquake was unavoidable then I guess it's pretty good to get a brand new house out of it. Like in terms of our financial standing the [February] earthquake was a massive boost to us.*

C180: *In the end we got a really good payment on the house and we were greatly better off financially with the whole thing and found a house which was unexpectedly fantastic. So, it worked out and it worked out really well.*

Participants reported new possibilities in discovering and pursuing a new career path after the earthquakes that was perceived as more enjoyable, satisfactory and bringing more purpose into their lives. Participants described the earthquakes as a catalyst for change in their careers, pushing them to do something that they otherwise may not have done. Time was described as an important factor for this and was referred to in two contexts - disrupted daily routines meant

there were more hours in the day to try something new, and time allowed individuals to reflect on what they really wanted to pursue as a career and why.

> C130: *I think in a way it [the earthquake] was positive because I was already thinking that I might change my job so it kind of pushed me into that. I worked with [organisation 1] and I was there for three years and then I worked with [organisation 2] which I really enjoyed. It was full on and I loved it and I also learned a lot. Yeah, a tremendous amount of experience with those people. So all of that was possible because there was time, lots of time.*

> C134: *I decided that I wasn't going to deal with those people anymore and that it was time to help good people. So, now I feel like I'm not working just to make money. So now I have been working with people who have really severe divorce situations where there are fearful and broken women and trying to keep them strong as well as the grieving children. I walk in and help them and try to sell the house and make them as much money as we can. So, that is something that happened which is good.*

> C113*: Eventually I was like, right, I need to get back to work and that was when I saw an advertisement for a job I was interested in. I applied for the job and got it. Really interesting environment to go into and that was one of the major attractions for me. I'm just as happy as a pig in shit there so to speak.*

Others described remaining in their previous jobs but having more interesting and lucrative work because of the earthquakes, giving participants a more purposeful role within their careers. Participants described having the opportunity to help others in the community through their careers. These opportunities were described as a privilege to be part of and not possible without the earthquakes.

C166: *I got to see some really cool things. My work changed as well in that I was already part of a group of people who were looking at future change in the [work field] and the earthquakes created exciting change and engagement opportunity. I got a lot of work out of the earthquakes, quite interesting and lucrative work.*

C197: *I worked in the area after with people who were frightened. I can't describe how that felt but I enjoyed doing the work and trying to be part of the solution. It sounds quite trite to say that it was a privilege but it really was. Working with the team, the group of people I was talking about before, are amazingly competent women and being involved with that was great and a huge pleasure. So, opportunities arose from the earthquakes that wouldn't have happened otherwise.*

C103*: I got to do some pretty helpful and useful things through my job as an [occupation] at the same time. I was doing the first sign outs of the earthquake victims and the way I handled myself was to help me get into the [career] and start my training as a [career].*

C180: *The earthquake created a huge amount of work for me which I really appreciated. You know, with businesses and people wanting their buildings photographed before it was pulled down and other pictures of buildings being torn down. All sorts of work came up.*

In summary, the theme *new possibilities* outlines opportunities in many aspects of participants' lives after the earthquakes. Participants described these opportunities as not possible without the earthquakes and often included a psychological component whereby participants described these opportunities as exciting, enjoyable and positive. Many described material opportunities such as rebuilding their homes in new and pleasing ways, becoming

more financially stable and rebuilding a new city. The rebuild of Christchurch city was described as more exciting and energetic and that Christchurch was finally coming into its own again nine years after the earthquakes. Others described gaining more interesting and valuable work after the earthquakes or experiencing changes within their careers that were viewed as more suited, fulfilling or purposeful.

4.2.1.2 Reappraisal of life and priorities

Participants described a *reappraisal of life and priorities* since experiencing the earthquakes. For example, participants described placing more emphasis on experiences, family, health, safety and their relationships with other people and less emphasis on material possessions and money. Many participants described that losing their personal belongings, their friends and their homes made them realise it is people that matter. Therefore, participants described a changed sense of what is important after experiencing the earthquakes and the circumstances that followed.

> C107: *Myself and my extended family and friends all lost a certain amount of stuff and I don't know whether we are all on the same page now but it's just stuff. Being so concerned about my father made me realise that actually, stuff didn't matter, you know. It was your family. I think it did focus the mind on your family relationships and new personal relationships rather than worrying about stuff.*

> C124: *I think for us it has made us think that material things aren't important anymore and that your home is where your family is. You know, I got so used to living in rental houses that weren't mine that I realised it wasn't really the house, it's who you're with.*

> C118: *I: Has your perspective changed on anything since the earthquakes? P: Yeah, I don't care about materialistic possessions as much and I don't care if I*

break anything, not that I was bothered before but I think I'm more focused on other things that matter to me like my family, children and relationships. I think I've always thought of that but I think the earthquakes have brought it more into focus.

One participant described that the earthquakes helped them realise safety and good health are what are important, while another participant described becoming more focused on experiences and opportunities since the earthquakes rather than obtaining possessions.

C121: *I: Can you think of any positives that have come out of the earthquakes? P: I realised that things can change and things are things. They don't actually matter they are just genuinely things and now that I have had kids I will fiercely protect them and we can start again it actually doesn't matter as long as everybody is healthy, safe and warm the rest just happens.*

C145: *I've always been focused on experiences rather than stuff, you know. So, the earthquake probably made me more like that. It was kind of like 'if there is an opportunity, let's do it. Let's just grab that opportunity and do it.' And my wife had a similar point of view so that was good.*

Further, participants described realising that money is relatively unimportant compared to their family and other people. Greater value was also placed on participants' own lives and the lives of others.

C134*: I feel like now I'm not working just to make money. Obviously you need to make money to survive but I've found that all those beautiful things that I love about life are with people.*

C118: *I put it into perceptive and I think well, I'm alive and my family are all here, what does money matter?*

One participant described the earthquakes as centering their focus again, distancing them from aspects of their circumstances that brought anger and frustration, and encouraged them to look at the bigger picture.

> C121: *Honestly, the [February] earthquake was probably at a good time for me because it took my angry focus on that [the earthquake] and going actually it doesn't really matter I'm still alive and yup that happened and I'm really pissed off about it but it just is what it is. The earthquakes kind of gave me that focus again.*

A changed sense of what is important also led to a change in behaviours. For example, participants described a change with whom they decided to spend their time with. For some, work became less of priority and consequently, spending time with family was considered more important. One participant described prioritising positive friendships that focus on the present, moving away from people who live in the past.

> C195: *The biggest thing that changed for me over that time was that I stopped working. I: Because of the earthquakes? P: Well, I don't know. It might be a combination of the earthquakes and something else but I was working for this company for a decade and probably within two years after the earthquakes I had more of an attitude around spending time with my family.*

> C121: *You always have that one friend who is always so dramatic and their life is dreadful and it's all over Facebook. I have gone away from those people and I just don't want to be associated with people who are living in the past and all the bad things that are happening to them is because they are terrible people when that's not actually the case.*

Related to appreciating the things in their lives more, the following participant described acknowledging the unfairness of life but also described realising that friendship, hope, family and God are what helps people through challenges and adversities.

> C145: *We like to think that we are in control of our lives, particularly in the West. We live in a bubble and sometimes reality intrudes in that bubble like your kid has cancer or you get an injury or something and you think, 'Oh, why did that happen to me?' But, that's life and we happen to be in this bubble that we can kid ourselves that our lives will be good and safe. I think what the earthquake did was it popped that bubble and I think most of us, myself included, went, 'Oh that's not fair.' I guess it hasn't made me fatalistic but it's made me realistic and I now think that there is suffering in the world but there is also hope. We can't flee from the suffering but we have hope, friendship, our relationships and god. That is probably my perspective around it.*

Moreover, one participant further described understanding the frailty of life and began to appreciate the smaller things more. The smaller aspects of life were amplified and were no longer viewed as a small part of their life but rather an important contribution to their happiness and sense of fortune.

> C103: *The great loss of life I understand. I have an appreciation now and I'm trying to grow as a person where you appreciate the small things more. You know, making dinner and my daughter - when I get home from work - she hears the gates and runs out and hugs me. So, how lucky am I?*

One participant described a change in attitude since the earthquakes and reported thinking more positively about difficult circumstances, making an effort to appreciate each day and not taking things for granted.

C197: *I think that it is that connectedness to people and not taking things for granted. It kind of puts things into perspective, even now if I am having a bad day I try to remember back to those days and I just think it's not even that bad.*

In summary, the theme *reappraisal of life and priorities* describes participants acknowledging what is most valuable in their lives. Participants placed greater value on family and their relationships with others, health and safety, taking opportunities that present themselves and appreciating the smaller aspects in life that ironically bring the most joy. Consequently, participants described aspects of their lives that are now deemed less important such as money and material possessions. Overall, the theme *reappraisal of life and priorities* represents participants' perceptions of what is nurturing, fulfilling and sustaining since experiencing the earthquakes.

4.2.1.3 Positive changes in self-perception

Participants reported *positive changes in self-perception* since experiencing the earthquakes. Frequently, participants described an increased sense of strength and confidence from experiencing the earthquakes and discovered their capabilities to do what was necessary during a time of stress. Participants reported feeling proud of themselves in the way they handled their circumstances and implicitly described a sense of surprise in relation to how well they faced these challenges, indicating that the earthquakes revealed parts of themselves they were previously unaware of.

C197: *I: Do you feel like there have been any positive effects from the earthquakes? P: Yeah, I think that no one ever knows how they will manage in a crisis until one happens. I felt more confident in myself in being able to cope with difficult situations. I felt that I could stay calm and didn't get panicked or anxious about things and had clear thinking. I was focused on what needed to be done.*

C188: *I: Can you think of any positives that have come out of the earthquakes? P: Yeah, so I'm not saying that you shouldn't work towards a goal but I'm saying that I will do what I want to do and what I need to do but whatever happens will happen and I can handle it. So, these things strengthen that.*

C103: *It just makes us stronger all the things we go through.*

The following participant described an increased sense of strength and their perceived reasons for this. Their sense of strength was linked to their actions – having a plan and making the right decisions to get home.

C104: *I: Personally, do you think you are a stronger person going through what you did? P: Yeah probably, yeah. You just have a plan and you stick to it and things work out. I was quite proud of myself to get home that day and make the right decisions to get home. I was quite chuffed with myself to be honest because I've never been in that situation before and I didn't know how I would react in a life and death situation. After the February earthquake I got back home and I thought to myself that I did alright and I got myself home. I think if it were to happen again I'd have more confidence in myself to do the right thing as well.*

Others described becoming more accepting of adversities, change and life challenges and realising that misfortune can and does happen.

C188: *I: Can you think of any positives that have come out of the earthquake for you? P: Yeah, I think I am more accepting and sort of detached and just accept that things can happen because they will happen. You know, you can't control things.*

C113: *Some people are accepting of change and a lot of people are not. I think it makes it hard when you've got people moving on and there are different rates of*

recovery. Some moving very slowly or not at all, some going forwards and some going backwards even. I like to think that I've been one who has come to accept change and like it.

Some participants described becoming less worried about things they cannot control since experiencing the earthquakes. Participants described focusing on aspects that they can control such as their own choices and actions and having faith that circumstances will work out.

C121: *I can't control it so I'm not going to be worried about it and I can control what I can and have concerns about the things that do actually impact me by my own choices. So, that's probably the difference now, looking at things a bit more positively.*

C117*: In terms of perspective I don't worry so much about things anymore and I don't think about earthquakes anymore. Some people get panicky and say, "what if this happens and what if that happens," but we went through the earthquakes and we came out of it okay in the end you know. So, I don't worry about these disasters happening because I figured it will all be alright in the end.*

One participant described themselves as less worrisome about future events and more organised since experiencing the earthquakes; doing what they need to do and not ruminating on what could happen.

C104: *I think we are better at planning how we are going to do things like for example we are in the middle of selling a house at the moment and trying to get into a new place. It's because we want to be in the right place at the right time for us. I think we plan long term a little better than we may have done previously. So, we've already signed up for a retirement village. We're not fearful. We don't worry about things. We don't think if we should do this or that in case there's*

another earthquake while we are away. We are just planning everything now to fix to the wall. You do your stuff, you prepare for it and then you forget about it and we've been more like that I think.

Others described themselves as more compassionate, less self-absorbed and more understanding of other peoples' needs since experiencing the earthquakes.

C121: *I guess you're a bit more mindful of other people's emotions and feelings especially post-earthquake. Sometimes you can be a bit condescending and I had to remind myself, well if you have nothing nice to say then don't say it at all. So, there was a lot of reflecting. Everyone reacts differently and it's okay. So, I'm more patient and kind I guess and less self-absorbed. It's not always about you, there's a lot of other things that are going on.*

In summary, the theme *positive changes in self-perception* describes participants perceiving themselves more positively since experiencing the earthquakes. Participants described themselves as stronger and more confident to cope with future challenges and adversities, more compassionate and understanding towards others and their needs, more accepting of change and life adversities, less worried about things they cannot control and more organised in their daily lives. These positive changes were described as occurring because of the earthquakes; participants saw qualities in themselves that may not have been acknowledged or considered previously.

4.2.1.4 Closer more meaningful relationships

Participants described *closer more meaningful relationships* since experiencing the earthquakes. For example, participants described becoming closer with their neighbours and the community following the earthquakes. This closeness was described in the form of talking to their neighbours more, getting to know people in the community more, spending more time together and lending a hand when help is needed.

C103: *The neighbours were brilliant, and we have loved them ever since and are even closer. With the neighbours it was very unifying and I got to know a lot more people. [Suburb] is great because it organised a lot of gatherings with people. We'd have fun music afternoons on the grass and we'd have pop up markets. It was just like that. So there was a lot more connection with people on a deeper level. The other thing is that we got to know our immediate neighbours much better. We would see each other and actually start a conversation.*

C180: *We look out for each other a little bit more now too. We have been there for about six years and since the earthquakes we do know our neighbours a lot better than before and we are more friendly with each other as well since the earthquakes. When they need help we help them out and we do get together more than before. So yeah, that was a change and it's a positive change.*

Others reported feeling closer with work colleagues after working together at a time of need. The following participant described viewing their work colleagues as family after experiencing the earthquakes and not simply people who they work with.

C195: *My work colleagues kind of all pulled together being in the park together after the earthquake. I felt really close to my colleagues and we became like a family. I feel more connected to my colleagues and I feel more connected to the city than I probably was before.*

Increased intimacy and closeness with partners was reported. Communicating and getting through earthquake recovery and having been through hard times together brought some partners closer, physically and emotionally. As a consequence, participants also described spending more time with their partners.

C145: *I think the relationship with my wife has deepened and strengthened and we are quite good at working through complicated issues. We have had previous issues that have gone to the core of who we are and have tested our relationship. But we got through that. The earthquake was another test and we got better at talking stuff through and we got better at giving each other space. The first five years after the earthquake we probably spent between 8-16 hours a week on earthquake recovery. But we got good at focusing on the things that we had to do and then putting it away and doing something fun together.*

C180: *I don't know if I should say this and I only say this because it is personal and does have some meaning, but we had more sex in the few days after the earthquakes than we have had in years and maybe in our whole relationship. I don't know why that was, but maybe it was because of the whole joie de vivre from getting through this situation.*

Experiencing fear and worry for loved ones at the time of the earthquakes provoked some to look out for their loved ones more. Not knowing where their loved ones were or if they were safe made some participants realise what they could have lost.

C104: *I: Are there any positives from the earthquake apart from the being more organised? P: I think we look out for each other a bit more. I think he [husband] was really worried about me when everything came apart and when he spoke to somebody and heard some buildings had come down in the city. He was a bit fearful and I was too. So now if I'm away, like travelling to see my mother or doing something like that, he tends to be more comfortable if I text him and let him know where I am or when I'm coming home and he does the same. So, I think we look out for each other a little bit more since the earthquakes.*

In contrast, one participant described their relationship with their partner as weaker or less close since experiencing the earthquakes. This was perceived as occurring because of a lack of emotional support at a time of need.

> C117: *I: Do you feel like your relationships with people have changed since the earthquakes? P: Yeah, relationship wise definitely. I think my relationship with my husband is not as good because I feel like I'll never forgive him for telling me to suck it up and I should have nothing to cry about. So yeah, that's definitely not as good as I want it to be.*

Some participants described their friendships as having changed, both abandoning less supportive or circumstantial friendships and gaining more supportive and valuable friendships.

> C145: *I think there were a few friendships we had that were circumstantial. We had a group of friends prior to the earthquake and then our life changed dramatically and theirs didn't. They had earthquake issues but nothing like we had so they were sort of still back there, whereas we were here and they didn't want to make the leap to join us in our pain. So, some of those friendships died and others sort of did come through in the end but the strength was from within, from our faith and my wife and I.*

> C134*: I: Have you noticed any relationship changes with other people? P: Yup, I was always someone who had heaps and heaps of friends, both male and female. But, through the earthquakes and through dad's passing, but there were two people who were new friends that came into my life who really supported me during that time. One was a musician and lived in [city] which was a really special place to dad and another was from [city] who ended up being a really good friend. I was really close to those two people during those difficult times.*

In summary, the theme *closer more meaningful relationships* describes an increase in closeness with partners, work colleagues and neighbours. Participants described getting to know their neighbours and community more, spending more time with those from the community and looking out for each other more since the earthquakes. Work colleagues were no longer viewed as simply co-workers but were viewed as family, while partners became closer having been through both the hardship and triumph together. This theme also describes the formation of new relationships after the earthquakes. While experiencing hardship together allowed many to come closer, others grew further apart. As such, the experience of deeper or more meaningful relationships can occur with the disappearance or weakening of other relationships, some recognising what relationships are circumstantial and what ones are lasting.

4.2.2 Hardship

4.2.2.1 Acknowledge an extraordinary event

The theme *acknowledge an extraordinary event* includes two subthemes that describe participants' perceptions of the earthquakes: *Magnitude and physical force* and *witnessing the aftermath*. These themes express a sense of awe where participants acknowledged that the earthquakes were unusual or remarkable; events that were beyond their everyday experiences of life.

Magnitude and physical force

The subtheme *magnitude and physical force* reflects participants' descriptions of the nature and force of the earthquakes as it was happening. Participants acknowledged that, for them, the force of the earthquakes was quite extraordinary. For example, participants described the earthquakes as violent, big and angry and often described the February earthquake as more destructive than the September earthquake.

> C103: *That one [February earthquake] was way more violent even though it was a lower magnitude. It felt more violent because the first one was like rolling and*

it was super fun. The February one was a threat and we knew it straight away. It felt different. It was violent and angry.

C117: *My mother in-law goes, "Was that an earthquake?" And I said, "Yep," and she goes, "Was it bigger than the other one?" and I said, "Look, If that one in September was a 7.1 this must have been an 8 or a 9." The February one was so much bigger and more violent.*

C130: *It was really violent and I thought, "Oh bugger that's an earthquake." It seemed to go on for ages and I started hearing the cutlery breaking downstairs, and I thought, "Oh my gosh, this is really big."*

Many participants described the motion and movements of the earthquakes using language such as shaking, swaying, flexing and buckling.

C166: *In the subsequent [February]earthquake you could see the world moving in ways it's not supposed to.*

C145: *I was only on the second floor but there were big glass windows and the whole thing is flexing and there's all this noise and just feeling like it's getting out of control.*

C103: *We got the kids out of bed and we stood in our doorway and the walls were swaying in and out like the house was buckling.*

Others described the noise of the earthquakes, often using words such as amazing and incredible to express how loud the earthquakes were. Participants described hearing loud sounds, such as objects breaking and infrastructure cracking.

C107: *So, probably the most relevant memory is the noise of the September earthquake. I woke up to shaking and this incredible noise of the roar of an earthquake. I don't think I'll ever forget that noise. That amazing noise.*

C104: *You could hear it hitting the building next door. You could hear it slapping the building next door and I was several stories up and you could just feel the buildings hitting each other as well as all the up and down and everything else.*

C130: *It seemed to go on for ages and I started hearing the crockery breaking downstairs and I thought, "Oh my gosh, this is really big."*

Participants described heavy and large objects flying and being thrown across the room and people being lifted off the ground, signifying the force of the earthquakes.

C130: *The photocopying machine, which is huge, moved across the room and landed on its side. That's how much movement there was upstairs. The kitchen just imploded and lots of staff were injured.*

C121: *It went from being that subtle earthquake where we had ten seconds to get yourself under and then it was lifting you this much off the ground. I watched my poor customer being lifted up and down and I was as well.*

Witnessing the aftermath

The subtheme *witnessing the aftermath* reflects participants' descriptions of witnessing the destruction that occurred from the earthquakes. This subtheme is distinct from *magnitude and force of the event*, in that this subtheme describes what participants directly saw on the streets, in the city and in people's neighbourhoods, capturing participants' descriptions of the aftermath of the earthquakes. For example, participants often described witnessing injured people and large amounts of liquefaction on the streets.

C118: *The other thing I remember was that the river came up bank to bank and it was filled with black mud. The road just opened up in various parts and liquefaction came out.*

C113: *It was amazing that after one little aftershock so much liquefaction would come up. One person's yard probably had one to two feet of silt and it all came up from a small aftershock. The biggest hole I saw was probably about 300 meters from home and the silt filled it up and it looked like a volcano.*

C103: *Sydenham was toast, you know. There were people with blood on their heads and heaps of liquefaction and it was like it was straight out of a movie.*

Witnessing collapsing buildings in the city, helicopters, sirens and people digging out other people from underneath buildings were also described, emphasising the chaos in the city after the February earthquake.

C117: *We walked past the shops and a lot of them had collapsed and there were people digging out people from under them. We could see smoke from the CTV building and everything was just sirens and helicopters.*

C197: *We knew that the Cathedral had fallen because people were saying the Cathedral had collapsed. Across the road from us I could see that another building had collapsed. That building had pancaked.*

C145: *There was an old brick building that collapsed outside while we were there. You just watched this thing and it just fell.*

Participants described seeing large amounts of dust from collapsed buildings and flattened vehicles. Witnessing such damage was often described as surreal or not real.

C121: *We got up to where the bus had been dropped on. At that point you're looking at it and it felt not real, it just looked like a thing rather than actually, "Fuck there's people in there."*

C118: *Driving through town was surreal because there were soldiers everywhere and just dust and squished cars.*

C195: *We looked out of the window because we can see the central city from our place and it was bad. Terrible things happened in there and we could tell from looking. There was dust everywhere.*

C197: *I remember walking out of the building and all I could see was dust like the air was brown. It was just dust everywhere and people pouring out of buildings.*

Participants described not knowing how impactful the February earthquake was until they witnessed the destruction in the city, while others described seeing the destruction on the television. Only then did some people realise how serious the earthquake was.

C180: *Being out in the Eastern suburbs I don't think we appreciated how dramatic it was. It wasn't until we went out on the roads that we saw the damage and we then knew that it was pretty serious.*

C118: *I didn't realise how big it was but then I saw the cracks and everything. That was my first taste of the effect on the city and seeing all the houses and the liquefaction.*

C145: *When we started seeing images on TV we thought, "Oh man, this is a big deal, we're not going home anytime soon."*

In summary, the theme *acknowledging an extraordinary event* comprises two subthemes describing participants' perceptions of the earthquakes. The subtheme *magnitude and physical force* describes the nature and power of the earthquakes as participants were experiencing it. Descriptions of perceiving the earthquakes as big, violent and powerful, as well as describing the force of the earthquakes such as, shaking, buckling and flexing contribute to this theme. The subtheme *witnessing the aftermath* includes descriptions of the destruction witnessed in the city and on the streets. Many participants described witnessing broken and collapsed buildings, masses of liquefaction, injured people, large amounts of dust and flattened vehicles. As such, participants viewed not only the earthquake itself as extraordinary but also the destruction it had caused.

4.2.2.2 Awareness of personal hardship

Participants reported acknowledging personal hardship associated with the earthquakes. Additionally, this theme includes a subtheme called other non-earthquake stressors and events describing other challenges unrelated to the earthquakes that contributed to participants' difficulties. Where participants described personal hardships, many reported damage to their homes and possessions, leaving many people's houses unliveable and without power, sewerage and water.

> C121: *The house was a complete tip and everything was gone inside it which was a real bugger. From the back of the house and all the way through everything had smashed as well as all of our wedding things. That was just a bit disappointing. Everything had come out of the kitchen cupboards and it was just a mess. We had electric lines and sadly we had no power for a good week so I couldn't get the blinds up. I just went into the house in its raw state.*

C103: *The house we were living in at the time had no power, no water and it shifted on its piles. There was liquefaction out everywhere and the house was trashed of course, so we made the decision not to stay there.*

C166: *I've lived through lots of earthquakes now and the significant event I guess for us was that our house was destroyed. It was written off entirely from day one.*

Those whose houses were not completely uninhabitable described their frustrations with arranging repairs, while others described the repair process as taking long periods of time to be completed.

C107: *I guess the follow on from that was that we did have repairs done which was a horrendous experience; don't want to do that again.*

C197: *We were out of the house for probably 10 weeks while we had the repairs done and that happened many years later, maybe 5-6 years later.*

C195: *Our final repairs were done 7 months ago, so 7-8 years later. The last thing to get repaired was the sewerage and that was quite a fight. But that is fixed now. EQC agreed to pay for it because it ended up being over 80,000 dollars. That was quite stressful thinking that we had to pay for that.*

Others described moving house and finding a place to stay as stressful, due to feelings of uncertainty and lack of security. Some participants reported moving several times after the earthquakes.

C107: *While they were doing repairs we had to move out for a while and the place we moved into was booked up to a point. So we finished up camping for a week and that was unpleasant; the whole thing was a bit of a negative.*

C166: *We were immediately displaced and we went back in to get our stuff but we never lived in there again. I mean that was a huge event. We got kicked out of that house after the February earthquake and not because that house was greatly damaged but because our old house, which had not yet been demolished, was going to fall on it. That was distressing because we thought, "Yay we are not displaced and we can stay where we are and life can carry on and we could be helpers rather than the victims." We were living in someone else's house and my son didn't have a sense of security and we had been displaced twice in two years and that was really hard on both of us and was a really tense time.*

C124: *We moved seven times between 2011 and 2017. The longest time we stayed in a house was probably 2016 to 2017 and that was the longest period. It was quite stressful finding a place to rent because even though we had good references and jobs we also had a dog and a cat and that was worrisome.*

Several participants described difficulties with EQC and insurance companies. Efforts to communicate with EQC and insurance companies about land and house assessments, payments, repairs and rebuilds were stated as one of the most disappointing and stressful aspects of the earthquakes. Some described having to wait years until EQC or insurance companies took care of their houses and payments. The recovery process and trying to deal with EQC was described as being more stressful than the earthquakes themselves, with many still battling with insurance companies and EQC nine years later.

C145: *The earthquakes were terrifying at the time but the recovery is a lifetime. It's a pain in the ass and it is. It totally is. My house was a black and white open and shut case. I had an engineer look at the house and they said, "No, this will need to be pulled down." It took EQC a year to come down to the same conclusion*

and then it took them seven years to replace it and I wasn't a difficult customer. My neighbour has been black balled by the insurance company and the council, but me, I'm a reasonable guy and I got screwed around.

C195: *I think if anything I found myself getting increasingly disappointed and angry with EQC over the years. That was really the main point of angst and stress. It kind of makes you tired dealing with people that don't always communicate back.*

C121: *I had this interruption with insurance which was the biggest crock of rubbish I have ever come across. Just total bullshit. They said because the damage happened in September and other buildings were still closed around me and I wasn't, that I wasn't covered by business interruption so bad luck.*

Participants described unjust behaviours of EQC and insurance companies, such as deceit and dishonesty, with many feeling they were treated unfairly. Others described losing large amounts of money to insurance companies and not receiving enough money to cover repair and rebuild costs.

C134: *EQC have probably been more damaging to Christchurch than the earthquake itself, for home owners anyway. The amount of deceit and bullying and all those kinds of things is heart breaking and I think that stuff has been horrific and the fact that it's still happening.*

C145: *We were shafted by the insurance company and they were just really dragging the chain. I felt a real burden on my shoulders and I was just bleeding money because the insurance companies were just impossible and I was completely powerless in that situation.*

C166: *After the February earthquake the insurance company had huge exposure and suddenly the ball park changed. They became progressively nastier and more difficult to deal with and evasive and dishonest.*

C124: *We had to sell our holiday house and rental to help cover the costs because the money we got from the insurance company wasn't enough and the cost of the rebuild was probably about 800,000 dollars and that didn't cover landscaping and all of that. We were caught between the time where you could just take the money. We would have just taken the money and built a smaller house on our section. We were kind of caught in the bad times with insurance with what you could and couldn't do.*

In addition to dealing with bureaucracy, many faced disruptions at work. Some lost premises or were unable to access their buildings, while others struggled to keep their businesses afloat; for some, this impacted their income and financial stability.

C118: *Work was a different story altogether. That was the most stressful thing really. We had five or six staff and there was nothing we could do to run the business. Half of the people expected us to be carrying on like we were and asking us why we haven't sent this and that. It was like, "We haven't actually got it to send to you."*

C130: *The big difference for me was that my job completely folded. The only thing I could do was teach at home. That made money difficult because my husband had already retired.*

Others reported ever-growing demands within their jobs, increased workloads and having to deal with angry and frustrated people.

C134: *I had to deal with a lot of the red zoners and we had to manage a subdivision which had been going really well before the earthquakes. People just started walking in and yelling at me and abusing me as if I were the government who had red zoned their land. So I had to work with a lot with those people.*

C188: *After the February earthquake we had a lot of pressure from the building industry to deal with the workload. There was a lot of pressure and a lot of change.*

C104: *I: Was your work disrupted? P: Oh yeah, it was awful. I worked for [organisation] and I had been there for nearly two weeks and I had just taken over the team. In that year I think I set up so much for the [organisation] and things like that and it was a lot of work.*

Some participants reported pressure and strain within their personal relationships and with others in the community due to stress. Participants described finding it difficult to communicate with people at the time of the earthquakes as people were angry and frustrated, while others felt a lack of empathy and understanding from those in different situations.

C134: *I started to realise that a lot of people were angry and everything was an argument, whether it be a friend or people I was working with.*

C166: *The only time that we both had strain with each other was when we were displaced after the second earthquake because it was like, "Here we go again." It was also just the stupid stuff and the people who had no idea what we had been through. That was what got me.*

C103: *It was a little bit testy with the wife during that time. There were lots of aftershocks and she was pregnant and just wanted to be at home; I don't blame her.*

Participants described grieving the loss of people they knew who were killed in the earthquakes or were saddened to see people injured.

> C180: *I can't help thinking that, you know, several people I know died. For that reason alone you feel like you wouldn't want to turn that clock back to when the earthquakes were happening because you would rather have those people. I had seen one of them a couple of days before she died and it was really nice to see her for the first time in a few months and then they were just gone. That was super sad.*

> C188: *There were hurt people and that affected me. So that hurt me and it was sad.*

Other non-earthquake related stressors or events

Participants described experiencing other non-earthquake related stressors or events in conjunction with earthquake related difficulties. These events are considered to be normal experiences of life, however, were reported to be difficult in the context of having to deal with additional earthquake related difficulties. For example, some experienced family bereavements or health problems since the earthquakes.

> C124: *Two family members had died within six weeks of that time frame so we had the remaining parents to deal with and grief and no house. In the meantime my husband had health complications and do did I. We put that down to the constant stress and the arguing with the insurance companies pretty much.*

> C134*: My father died and that was a stressful event. Another thing that happened to me was that I had [health complications] earlier on. I was dealing with all that and then I found out that I don't have the ability to have children anymore. So, that was another thing that really threw me as well.*

C145*: The day before the [September] earthquake my [family member] was admitted into the hospital and they had cancer for quite a number of years and she died four months after the February earthquake.*

One participant described having other responsibilities to take care of on top of earthquake related responsibilities.

C195: *One of my family members moved here as well and it's not earthquake related but that's another responsibility and someone to look after.*

Another participant reflected on other events that happened in Christchurch since the September and February earthquakes such as the Port Hills fires, floods, the Kaikoura earthquake and the Mosque shootings.

C113: *We continue to have interesting times in Canterbury. We had the Port Hills fire and about three or four months after that we had flooding in the South and Central Canterbury and more recently we've had the shootings. Someone was saying recently that Christchurch is one of the few locations worldwide that has had a major natural disaster and a major shooting in a relatively short amount of time. We have a collective timeline of events because we had the Canterbury earthquake sequence from 2010-2011 and then the Kaikoura earthquake and then the fires, floods and the shootings.*

In summary, the theme *acknowledge personal hardship* describes several difficult experiences at the time of the earthquakes, after the earthquakes and the years that followed. These hardships posed many challenges, such as repairing houses, dealing with EQC and insurance companies, finding a place to live, moving several times and keeping jobs afloat. Many participants described strain within personal relationships and with others from the community due to the stress. These descriptions emphasise that it was not only the earthquake

itself that was considered difficult but also the aftermath and the circumstances that followed. Additionally, some participants described experiencing other non-earthquake related stressors such as family bereavements, health complications and other events.

4.2.2.3 Awareness of negative emotions

Participants described experiencing negative emotions in response to what was happening at the time of the earthquakes and in the aftermath of the earthquakes. For example, participants described feeling fearful or scared during the earthquakes and ongoing aftershocks.

> C117: *About an hour or so later the second earthquake hit and the second one was bigger and that was scary. I remember we were sitting in the school and every time a big one would come everyone would scream and it's quite scary being in a place with lots of people and lots of upset kids.*

> C134: *Then we had the big earthquake which was quite scary and we were staying at my aunty and uncle's house and it was just so scary.*

Others reported shock in response to the earthquakes themselves and the destruction the earthquakes caused to people's homes and in the city.

> C166: *In the light of day I was completely shocked by the amount of damage that occurred to the house because it was a very old house.*

> C121: *Then the earthquake stopped and we kind of just stood there like, "Fuck, this is just, what the fuck?" You're just looking around and you're like, "What the fuck, that was nuts," can't quite get my head around that.*

Participants commonly reported distress and sadness about ongoing aftershocks, being in the midst of the earthquakes and loss of the city. Some participants reported crying in response to their experiences, while others responded with anger and frustration.

C117: *Then the June earthquake came and just when we were getting back to normal, we had another earthquake again. Honestly it felt like, "Are you fucking kidding me?" That one really knocked me because we felt like we got there. So for me that one was actually the hardest because that was when I started getting panic attacks all the time. I started crying every day. I just thought, "Why have we got another big one? This is not fair."*

C188: *My biggest sadness was seeing some of the architecture and the heritage buildings that had all fallen down.*

C145: *I had periods where I was pretty difficult to live with and I had other attributes that have been developed in a positive way and other times where I was just frustrated and angry.*

C180: *Taking photos in town was sad and it was really sad because I saw the CTV building that had come down.*

Others described feeling concerned and distressed not knowing where their loved ones were or if their family and friends were safe.

C103: *I was at the stage where I was getting quite concerned. I ran to the evacuation spot where they were meant to evacuate our children if there was a disaster and they weren't there which was distressing to say the least.*

C107: *I still remember thinking about where my dad was because he was in town. I was beside myself and I told my husband, "You have to go and find him," and he asked, "Well, where am I going to go?" And I said, "Well, I don't know, but you have to go and find him." I was getting desperate about dad. I just thought, you know, he was in an old building and his car was in the carpark.*

Participants reported feelings of anxiety during the earthquakes and ongoing aftershocks, while others described feeling anxious going into buildings and carparks following the earthquakes.

> C107: *I also remember the next day we all needed some stuff from the supermarket and I remember walking into that supermarket and being really conscious that it was a long way to get out. If anything happened, it was just a bit further than I liked.*

> C117: *The Boxing Day earthquake, even though it was only like a four or five, it knocked things off shelves. We got a bit of an adrenaline rush and sort of got quite nervous about that one.*

> C121: *You just didn't want to be in big spaces and didn't want to be in closed spaces where you couldn't get out if you needed to.*

One participant described feeling anxious about natural disasters occurring in the future.

> C113: *We still have the Alpine Fault on the horizon and the likelihood of that gets a little bit higher every day. It's been 302 years since it last went. The average recurrence interval was 291 years. You can almost say during these kids' lifetime they are almost guaranteed to see the Alpine Fault go. You asked me earlier if I was anxious about things and tsunamis, climate change, and the Alpine fault are certainly up there.*

In summary, the theme *awareness of negative emotions* reflects strong emotions felt during and after the earthquakes. Fear, shock, distress, sadness, anxiety, anger and frustration were common responses to participants' circumstances and earthquake experiences.

4.2.2.4 Awareness of others' hardships

Participants described having an awareness of the hardship and distress of people around them. This theme is similar to the theme *lucky compared to others*, in the sense that

participants are aware of the hardships of other people. However, this theme is distinct as it does not have a comparative component. An evaluation and comparison of one's own standing in the aftermath of the earthquakes is further described in the subtheme lucky compared to others under the theme optimistic positive appraisal. In the subtheme *awareness of others' hardship,* participants acknowledged the nature of other people's experiences and the difficulties other people faced. A general understanding of others' hardships was described.

> C117: *They were like, "Why is everyone making a big deal about the earthquakes, they were nothing," and I said, "They were huge for some people, don't you dare say that in front of people." You know, some people lost people and some people lost their houses.*

> C166: *I've got a number of friends who are finally restoring their house and it has taken years off their lives and hundreds and thousands of dollars. It is just terribly hard for them, especially those who had to deal with that and carry psychological burdens.*

> C134: *I realised that there are a lot of people out there that are really suffering and there are little old ladies that have all this stuff over their head and they are overwhelmed because they have broken homes and they don't have family and it is massive.*

Empathy, compassion and understanding was demonstrated in response to people who were struggling. Participants described that not everyone approaches difficult circumstances the same way and made an effort to be patient with other people.

> C121: *My husband's mother, even two years later, the slightest rattle would just send her off the cards and I would really have to tell myself not to be so impatient because that was her way of dealing with it because she hasn't actually dealt with*

it. She wasn't in either of the earthquakes so she just saw it from the side and I think that's a lot harder to deal with than if you were smack in the middle of both of them.

C118: *I feel very sorry for people that have lost family and I feel sorry for people that are badly affected. I have a friend who just falls apart and it's not that I think she's feeble and hopeless, it's more that we all react differently.*

C117: *There were teachers on the gates and the teacher who was on the gate we went through was crying and crying and really upset. The kids were all on the playground and they were all crying and heaps of them were upset and that's really upsetting as a parent.*

Acknowledging other people's hardships also encouraged participants to act in ways to help or alleviate others' distress.

C107: *I suppose that another negative and a positive was that my mum's friend who was never married and had no family had a lounge full of china that had all come to grief and she couldn't cope with it. I remember myself and my husband went over there and threw bits away for her and kept pieces that could be mended because she couldn't face it. She was really beside herself. So it was good that you were able to go and help but it was a negative that people like that were elderly and struggled.*

Having an awareness of other people's hardships provoked some participants to try and reason why some may have responded more negatively than others. This was interpreted as participants trying to make sense of other people's suffering and trying to find solutions to help people cope better.

C104: *Some coped better than others and a couple of people left Christchurch eventually. I know one lady who was particularly affected because it affected her children. Personally, I think if she coped better her children would have coped better as well, but she was struggling.*

C188: *I hear stories of other parents that, you know, their kids were having a horrible time and I would ask them how they are doing with it because it could all be projected onto them.*

In summary, the theme *awareness of others' hardships* describes participants' awareness of the hardships and emotional distress of people around them. Having this awareness led to empathy, understanding and compassion towards those who were struggling, while others responded with helping behaviours.

4.2.3 Optimistic Positive Appraisal

4.2.3.1 Positive sense of self

Participants described themselves using positive adjectives such as calm, practical, resilient, strong or optimistic. Participants spoke of themselves as able to cope with challenging circumstances and viewed themselves as resilient and confident in the face of adversity. Furthermore, this subtheme includes participants describing the resilience and capabilities of others, viewing others positively in a time of struggle. The following participants described Christchurch residents as strong, resilient and capable people.

C103: *It happens to everyone all around the word with earthquakes and natural disasters. I think Christchurch handled it very well. I don't think we are special and I don't want to be disparaging towards other people. It's more that I stood up and think we're awesome, but I don't think that we should think we're special. I think that we should roll with it and move on and that seems to be what we have done.*

C188*: One thing that is a positive that I really appreciate is the resilience of the people across Christchurch and how well we have supported each other. We have set an example in two ways now through the earthquakes and the shootings event. I think we are a strong community.*

Other participants described themselves and their family members positively, viewing both their family members and themselves as resilient and optimistic people.

C166: *I think my son and I are both optimistic and sort of resilient and present focused people. We live in the day and obviously we think about the future and make provision for it but we don't look back a lot. I have also been optimistic and glass half full and resourceful and resilient.*

C180: *I think that my wife and I are quite resilient or at least okay about the earthquake stuff whereas there are people that aren't. We have been around friends where there is an aftershock and they're all screaming and yelling out to their kids and stuff like that. Then there's us and we are just telling them to calm down and that it's just an aftershock.*

Participants described themselves as capable in several ways: staying calm, thinking of solutions and being self-sufficient and self-motivated. Some participants described gaining these positive qualities from the nature of their jobs or from previous experiences.

C121: *I wouldn't hide from it because I'm quite a self-motivated person anyway and I've always had businesses in the background and I've always enjoyed that space and I'm not afraid to work hard for something if I believe in it. I think that sort of pushed me a bit further.*

C166: *I've worked in medicine and I learned that panicking and freaking out isn't terribly useful and I'm also used to comforting people when they're in very*

stressful situations. So at the time of the earthquakes I remained very calm and just stood in a doorway and did what I had to do.

C188: *That was something I also learned from other difficulties in my life like my break up. It was - whatever happens I can handle it.*

C197: *I thought that I coped quite well. I believed that the best way to manage a crisis is to stay calm and collected and then regardless of what happens you will be able to think of a solution and work it out. I was quite calm all the way through.*

Viewing oneself as a strong person was also reported. The following participant described themself as a strong person and a protector of those around them.

C134: *He [EQ expert presenter] started to talk about people like me who are the strong ones. I was protecting everyone like my mum and work and stuff.*

Other participants described their coping abilities and calm nature as part of their character.

C104: *I've always been a coper. I've never been particularly highly strung. I've always been one of those people who just have a plan and do it. I've gotten better at it as I've grown older.*

C188: *When the Kaikoura earthquake happened people were jumping around everywhere and the sirens came on and I was just trying to sleep. My husband made me get up and we drove to the top of the hill with the dogs. I said, "Come on, let's go home." So, we came home and got into bed and there was a knock at the door and people shouting, "You've got to get out, you've got to get out." I just said, "Leave it, it's fine." I guess that's just the way I am.*

In summary, participants explicitly described themselves and other people in positive ways and reported confidence in their own abilities to respond calmly and competently to

earthquake related difficulties. For some, these positive qualities were gained from previous life struggles or from their careers, while others described themselves as characteristically able to cope effectively with challenging circumstances.

4.2.3.2 Openness to earthquake related experiences

Participants described excitement, interest, openness or fun associated with experiencing the earthquakes or their circumstances. As such, participants viewed aspects of the earthquakes as enjoyable. Commonly, participants described the earthquakes as cool, awesome or exciting, and viewed the earthquakes as a positive and new experience.

> C103: *It was awesome, just awesome. It was one of the coolest things I've ever been through in my life.*

> C117: *I had no fear of that one because it was really exciting and novel and something new. We were on the internet within a minute and looking at the TV to see what's happened. It was so exciting. After that we just had lots of aftershocks but they were more exciting than scary. I just thought, "This is great, it's quite fun and we got so lucky that we got this big earthquake."*

> C180: *I hate to say this but I kind of missed them. That sense of awe that I had when I first experienced them. I mean, obviously it's not great in so many ways but it is exciting. It was one of those experiences where it was like, "Oh my god, the world is pretty awesome."*

Others described finding humour in the experience, viewing the mess as something to laugh about or creating games on how big the aftershocks were.

> C130: *This is really funny, our pantry is situated directly under where our water heater is upstairs and it's a decent size. So anyway, it had gone straight through into the kitchen and the contents of the pantry, you can imagine, looked like nasty*

porridge because it had rice and flour and raisins and all those things. I remember we sat there and looked at each other and then we burst out laughing; the mess, you know.

C118: *We used to always guess how big they were. We got good at that. I don't think I'd be so good at that now.*

C107: *I walked into the kitchen and the fridge had opened and there was a jar of beetroot. There was beetroot everywhere and it has its funny side because everything just was covered in purple.*

Some participants described being able to relax, having the chance to have a holiday and experiencing something new every day. These circumstances were described as something positive that come out of the earthquakes.

C145: *We had this period of six weeks which was a blessing for us because my mum died a couple of months later and we hadn't been to the North Island for a while. So we saw lots of friends and family and because we had a car we could get around quite a bit.*

C130: *It was a jumble but in a strange way it was remarkably exciting because everything was totally new every day.*

C180: *We had a nice time with the family. We probably drank a bit more which wasn't because of the earthquakes but it was just more that we were now on holiday for four days. It was actually quite a happy time and I have good memories of that.*

Others described interest and curiosity about the earthquakes, expressing a desire to learn more about them.

C133: *I was really surprised when I started to get notifications and saw the news saying that it was out in Canterbury near Greendale. So I found that interesting because I didn't expect this location for a strong earthquake like that.*

C117: *Since the September earthquake I've been obsessed with earthquakes and started to learn about them, I just loved them.*

In summary, participants described experiencing some aspects of the earthquakes as enjoyable or positive. Many described the earthquakes as exciting, cool, awesome and interesting, while others enjoyed the chance to relax or have a holiday. Some found humour in the experience, viewing the mess as something to laugh about. Overall, this subtheme describes participants' sense of openness to the experience – both the earthquake itself and the circumstances that followed.

4.2.3.3 Lucky compared to others

Participants described evaluating their position in the aftermath of the earthquakes in comparison to other people, and consequently, viewed themselves as fortunate. Frequently, participants described themselves as lucky that they survived the event when others had lost their lives and lucky their family members and friends were safe when others had lost loved ones.

C107: *Of course with the February earthquake a lot of people did lose their lives and you realise how lucky you were.*

C124: *We do still feel grateful because we didn't lose any of our family and in that time of moving around we lived next door to people who had lost their family in town from buildings falling on them and pancaking. So we always felt quite grateful and we were affluent enough to buffer any financial costs.*

C145: *At the end of the day it's a house and the main thing for me out of the earthquake is that my family are safe and secure. I didn't have anyone close to me die in the quakes which was lucky.*

C121*: I just spent the next few days going, "What the fuck, please don't be any of my friends." We were quite fortunate that none of our direct friends were killed which was really lucky. Lots of friends with friends were.*

Others described being lucky that they could remain in their neighbourhoods after the earthquakes and lucky that the damage to their homes was relatively minor compared to what others had experienced.

C104: *I think my husband and I were very lucky because we still had our house and that is a big thing. If you still have your house, your stuff and your family, everything is still the same. We still had that anchor and we had that community and still have that community and so they were all big things. We weren't all scattered and that was a lucky thing for us.*

C130*: Further down the line after the February earthquake we were one of the first houses that were fixed because we had no structural damage. We had Jib board and night storage heaters and water tanks. We didn't have structural damage which was really lucky.*

Participants often described their own hardships as less substantial compared to what other people had faced. Therefore, some participants perceived they should downplay or diminish their own hardships as others were less fortunate.

C130: *There were a lot of people who had suffered much more than us so we were very lucky.*

C117: *Sometimes I look at other people who had bigger issues like my best friend and her house was red zoned so they weren't allowed to go back into their house. She lived in a tent and then obviously got red zoned and then she bought a new house. It was just that she went through a lot more, you know, she went through a lot of hardship.*

C121: *There's always someone who is in a lot worse position than you are so it's just being mindful of that.*

A sense of being lucky compared to other people encouraged compassion, empathy, generosity and kindness in response to those who were perceived as less fortunate. Participants described wanting to help in some way to make others' lives easier and empathising with those who were struggling or had more difficult circumstances to deal with.

C124: *There was also a family living in our rental property that had an autistic child and a dog and we knew if we kicked them out of there they would have nowhere to go. We made that decision to let them stay there and we were more financially stable than they were.*

C195: *There was someone's house next door that was damaged a lot worse and she came over a little freaked out and I reassured her a little bit. So there were other people who needed more attention than we did.*

C118: *With the house we were really lucky because my husband and I worked part-time and we were able to spend more time ringing and sorting things out. There are these poor people who only had an hour in their lunch break or something to try and get things sorted.*

In summary, the theme *lucky compared to others* includes participants' descriptions of themselves as fortunate compared to other people. Viewing themselves as fortunate in light of

other people's struggles appeared to reduce a sense of misfortune. Participants described feeling lucky and grateful for a range of circumstances: lucky that their family and friends were safe while others had lost loved ones, grateful that they survived the event when others had lost their lives, and lucky their houses were relatively stable compared to other people's homes. Participants often downplayed their own difficulties after witnessing other people who had been more adversely affected.

4.2.3.4 Lucky compared to what might have been

Participants described their circumstances as lucky compared to what might have been. *Lucky compared to what might have been* is similar to the *theme lucky compared to others*, in that participants described themselves as fortunate or grateful for their circumstances. However, this theme is distinct in that it describes participants reflecting on what could have happened but fortunately did not happen. As such, participants described alternative or near miss events and reported themselves as lucky, grateful, relieved or thankful these events did not occur. This theme also captures a sense of vulnerability as participants described an awareness that things could have been very different and, consequently, they could have been worse off.

> C104: *If it had happened later and I'd been walking back to my car I probably would have died because there's a whole series of buildings that I used to walk past every day and that all collapsed; it was quite a sight.*
>
> C188*: Luckily, I was just very fortunate that day, that I usually take the bus into town but that one day I had driven the car so I could do some shopping on the way home.*
>
> C117*: Then the December 23rd earthquake hit which was almost identical to the June 12th one. We were in the Palms doing Christmas shopping and I remember being so thankful that my kids were with me. I was about to give my kids five or*

ten dollars each and we were going to separate so they could go and buy something; I was glad that didn't happen.

C130*: On the day of the February earthquake we were preparing for early exams and we only had half the school there, which was a huge blessing. So there were only about 30 students and about seven teachers.*

Some participants described the order and timing of the earthquakes as lucky*;* if the earthquakes had occurred at a different time or in a different order, circumstances could have been a lot worse.

C113: *If we hadn't had the fourth of September earthquake and jumped straight to the February earthquake there would have been all these unreinforced brick masonry facades in the city. People would have been out having lunch on a summers day and we would have probably had hundreds of people killed from unreinforced masonry. That was actually the saving grace that a lot of the unreinforced masonry was taken out after the September earthquake at 4:30 in the morning when almost everyone was tucked up safely in bed. We really dodged a bullet in that context.*

C121: *It was quite fortunate really because if the September earthquake happened at that time of day like the February one a lot more people would have been killed and a lot more things would have come down.*

Participants described feeling grateful that family members and themselves had stayed home on the day of the earthquakes despite having plans to leave the house.

C103: *My wife and I were going out for lunch the day and we're very grateful we didn't and Amy was tired so she went to have a nap.*

C117: *When the February earthquake came around it was my day off from work and I was just working part-time at [organisation]. My mother in law was here on holiday from Scotland and she had dementia and nearly every day she would go for a wander either into town to walk up and down Cashel Mall or to Eastgate to walk around the shops. But that day, she decided to stay home and read a book.*

In summary, the theme *lucky compared to what might have been* describes a sense of relief and awareness that circumstances could have been different and that participants could easily have been worse off. Such reflections gave participants a sense of fortune and thankfulness for their circumstances as they did not experience negative events that could have potentially occurred.

4.2.3.6 Acceptance

Participants described a sense of acceptance towards earthquake related difficulties. In this subtheme, participants described putting aside their wish for their circumstances to be different and accepting their circumstances for how they are. Participants demonstrated acceptance by focusing on things that can be controlled such as their responses and being prepared for challenges they may face.

C121: *I thought that, actually, it's not going to change. It doesn't matter what I do, it's going to happen or it's not and if it's going to happen then I'd rather be best prepared for it than not. I also had my health stuff in the background, but you just take what you can and there's things that you can't control and you just have to deal with them the best that you can.*

C188: *I just had this mentality that it's part of life and it happens. There were all these changes and I was dealing with it and accepting it. There is still life left in the world and we live and learn. You know, life happens.*

C130: *I just had that belief system that everything was as it should be and it was just a question of understanding that and not wishing for it to be different.*

Others described understanding that the event wasn't something that could be controlled and recognised that no one was to blame.

C103: *It was out of our control. It's nature, you know, no one is to blame or anything like that. It was a whole different kind of disaster to what we've had.*

C180: *There was good and there was bad. The bad was really bad but the good was also really good. It just is what it is; we can't control it.*

One participant described acceptance towards other future adversities or natural disasters and reported accepting the reality that misfortune can happen at any time.

C118: *I think if it's going to happen, it will happen. They are saying now that the Alpine Fault is overdue but I sort of think that it may not happen for another 500 years. So, why worry? Where is that going to get you? I really feel sad for people like that because they waste an awful lot of emotion worrying about things that may never happen and if they do happen, what's to say it will end badly. I wouldn't like to go through it again, but I guess if you do, then you have to if you have to, you know.*

In summary, the theme *acceptance* describes participants accepting circumstances for how they are and not for how they want or believe they should be. Participants reported thinking realistically about their circumstances and what aspects of their lives they could and could not control. Not only did participants accept the reality that there are few things that people can control but they understood that these occurrences are part of life. As such, participants described letting go of what they couldn't control, focusing on what they could control and acknowledged the realities of life even if they were perceived as difficult.

4.2.4 People helping people

Participants described reciprocal helping behaviours at the time of the earthquakes, illustrating a sense of mutual social support at a time of need. Participants described receiving emotional and practical support from those in the community and giving emotional and practical support in return. Many participants described protecting people and making an effort to keep people safe. Protection was described in two contexts - protecting others physically and protecting others emotionally.

> C103: *I remember running to my wife and jumping into the bookshelf because the bookshelf we had in the hallway had fallen down. She was getting out of bed holding onto the walls and she called out for me. The drawers came out of the tallboy and hit her. I just got her and protected her the best I could.*

> C197: *For the February earthquake I was at work and I was with a client and I remember thinking, "Shit this is an earthquake" and then thinking, "I'm supposed to do something." The person I was with got on the floor and I hunkered over them and grabbed them and protected them that way.*

> C134: *My big thing was protecting my mum and trying to keep her sane through all of this. I was trying to keep the home as the sanctuary so it was safe and secure and all that kind of stuff. It was all about looking after the home and making sure everything was safe for my mum.*

> C121: *We went out and this customer was just hysterical. I found someone to sit with her and made sure there were other people around so she was safe.*

Participants with children described being a role model and remaining calm so their children weren't frightened or overwhelmed, protecting them from the chaos.

C188: *I remember making an effort to be calm and make an adventure for the kids so they weren't getting upset about it. So we would say, "Oh, that's okay. It's just an earthquake. It's exciting." We just told them that we could sleep out on the driveway and look at the stars and just said, "How fun is that?"*

C117: *I was telling the kids to be totally calm and be a role model so they didn't freak out. I said, "Right, when we get to the shops, don't be shocked there's going to be buildings falling down and we'll just keep going." I didn't want them to look too closely so we sort of just kept walking along.*

Participants described providing emotional support to those around them, such as comforting others, calming people who were struggling, checking in on their neighbours and gathering people who were alone. Some participants described a sense of responsibility to meet the needs of others and alleviate distress.

C145: *We were sort of thinking, "Should we be helping people, what do we do?' So, my wife and I just went around the whole street and just knocked on doors to check if everyone was okay and picked up stray dogs and we found a few kids who were at home alone and invited them to stay with us or to stay at home.*

C134: *I remember a guy who had a few heart troubles and I just checked on him and made sure he was alright. He was pretty white and I remember the owner of the business was just absolutely losing it. I felt like I had a responsibility to make sure that people felt okay. It was kind of like, it is their problem but it's also my problem.*

C180: *I was with a friend and the lights went out and this middle aged women who was looking quite shaken up had fallen on the ground. I went over and tried to calm her down and just said, "They do shake you up a bit don't they?"*

C188: *We were also dealing with people who were affected and we had a bit of a role of giving them some comfort, reassurance and confidence about whether they could stay in their house or not. I knew we had to be positive or reassuring to them. I didn't want to make light of it or be too serious and just tried to support them. I felt like there was a responsibility to support them as well.*

Others described providing practical support to those around them such as helping people get to their loves ones, cleaning up the streets and in people's homes and giving a ride to people without transport.

C104: *I got my car going and managed to get out of the city. I was going down Hills Road. There were a couple of ladies who were walking and I picked them up because they were trying to walk in high heels and things and that was the best thing I ever did.*

C113: *After we had the 23rd of December earthquake in 2011, I went out the next day with the student volunteer army and shovelled silt for a day.*

Participants described the actions of other people in positive ways. Participants described feeling appreciative and grateful for friends, colleagues, family members and strangers who offered their help at the time of the earthquakes.

C166*: I had friends and also neighbours I'd never met and this jogger running past emptying my house into boxes and carrying furniture to the trailers.*

C107*: There was a man who couldn't get out there fast enough and I think he just didn't know what to do and he had his own place to worry about. We were really grateful that he had come. I think that was it again, people were looking out for each other. Mum was by herself and she had walked out onto the lawn and*

someone had the thought to go and check on her and were just so grateful for that and that lady that had brought dad home.

C104*: I had a couple of weeks where I didn't have to come into work because we had no power and no water. They [work colleagues] got water and medical kits to me and they got all sorts of stuff to me. They were fabulous.*

C117*: We got home and my parents were amazing and they had come in and cleaned up everything for us. So the aftermath was okay for us because we had this holiday and then came back to a clean and tidy house because my parents had stepped in and done all of this stuff which was amazing.*

Services such as the Police, the Navy and Red Cross were appreciated for their supportive and helpful roles.

C118: *My husband asked the Police if we could retrieve a couple of computers and the staffs' handbags and they said no. But, another police officer let us in for five minutes. I could see it from their point of view because if there was another earthquake and something happened then they would get the blame. That policeman was very good and he came in with us and helped us carry some computers down.*

C130*: I remember being immensely grateful because there was so much help from the Navy. They were absolutely brilliant and had a boat in and they were powering up some of the generators in the village so that people could have a coffee. You know, little things like that make such a difference.*

C195*: At some point people from Red Cross came over with a food parcel which was really nice.*

One participant described the kindness received from other people outside of Christchurch who were willing to help.

> C145: *It was amazing. When we got to Blenheim my daughter who is not so good in the car was sick and we had the experience of scraping vomit off her car seat on the side of the road. This lady who was a local said, "Are you from Christchurch?" and we said, "Yeah," and she said, "Come to my place, come and stay the night and use my washing machine. What can I do for you?" It was like that in Kaikoura as well. They gave us a free pie and there was this outpouring of support from total strangers.*

Participants described a sense of togetherness at the time of the earthquakes due to the shared experience.

> C130*: I remember we went down to the village and we spent time sitting and talking to everybody and we were all swapping notes. It was very reassuring to hear that, actually, everyone's in the same boat. People were also sharing water because they had springs. So it was lovely and all of that was good.*

> C180*: I think that brief period after the earthquakes was the one that I have good memories of because there were so many good things happening right then and there. Everybody was pulling together and making it happen and finding new ways to make things happen and I felt that Christchurch kind of needed that.*

> C188*: One thing that is a positive that I really appreciate is how well we have supported each other.*

> C196*: There was a lot of spending time with people and getting together. There was a community feel at the time. We just got together regularly and supported one another but it isn't so active now.*

In summary, the theme *people helping people* describes reciprocal helping behaviours at the time of the earthquakes. Participants described giving emotional and practical support to people in the community and receiving emotional and practical support in return. When help was given, participants often described feeling a need to help in some way or making an effort to protect and comfort others, capturing a sense of responsibility or role. When help was received, participants commonly described the actions of others in positive ways. Participants described feeling grateful and appreciative for friends, family, colleagues, neighbours, strangers and services such as the Police, Navy and Red Cross. A sense of togetherness was described - gathering with the community at a time of need. Overall, this theme describes the essence of social support – acquiring support and assistance from other people during challenging and distressing circumstances.

Discussion

Sixty Christchurch residents who identified as coping well after being exposed to major earthquake related events were interviewed nine years after the Canterbury earthquake sequence and approximately six years after baseline assessment. Several studies provide evidence of posttraumatic growth among people who have experienced a potentially traumatic event, however, posttraumatic growth has primarily been investigated in people with marked psychopathology, such as major depression and posttraumatic stress disorder. As such, little is known about posttraumatic growth in psychologically healthy people who have experienced a challenging or otherwise potentially traumatic event. Furthermore, there is little research that investigates posttraumatic growth over time particularly using qualitative analyses and, in an earthquake, exposed sample. Two areas of interest were explored in the current study: (1) Whether posttraumatic growth is evident nine years after the Canterbury earthquake sequence and approximately six years after baseline assessment; and (2) What themes may facilitate the

posttraumatic growth process in psychologically healthy people. Thematic analysis revealed that participants reported outcomes of posttraumatic growth nine years after the Canterbury earthquake sequence. Themes describing experiences of posttraumatic growth provide evidence for research question one and will be discussed in Section 5.1.2.

Thematic analysis revealed three main themes that do not reflect outcomes of posttraumatic growth but may describe processes that facilitate growth in psychologically healthy people. The first theme, *hardship,* comprised four subthemes: *Awareness of an extraordinary event, awareness of personal hardship, awareness of negative emotions and awareness of hardship for others.* The second main theme, *optimistic positive appraisal,* comprised five subthemes: *Positive sense of self, openness to earthquake-related experiences, lucky compared to others, lucky compared to what might have been* and *acceptance*. The third main theme was *people helping people*. While these themes do not represent direct experiences of posttraumatic growth, these themes relate to constructs that previous research and theory have suggested are related to the development of posttraumatic growth. As such, these themes may be important for understanding the complex processes that support experiences of growth in psychologically healthy people. Themes describing processes that may lead to growth provide evidence for research question two and will be discussed in Section 5.1.3.

5.1.2 Posttraumatic growth

One of the aims of the current study was to gain a richer understanding of the experience of posttraumatic growth in a resilient sample several years after the Canterbury earthquake sequence. Thematic analysis revealed that participants reported posttraumatic growth nine years after the Canterbury earthquake sequence and approximately six years after baseline assessment. Themes describing posttraumatic growth in the current study were: *New possibilities, reappraisal of life and priorities, positive change in self-perception and closer more meaningful relationships.* Themes signifying positive changes after earthquake exposure

in the current study align with previous research and theories that posttraumatic growth can be expressed in the form of positive changes in the self, in relationships and philosophy of life (Tedeschi & Calhoun, 2004; Janoff-Bulman, 2004). These themes are associated with dimensions of Tedeschi and Calhoun's Posttraumatic Growth Inventory. For example, the Posttraumatic Growth Inventory dimension of increased strength has similarities with the theme *positive changes in self-perception*, the dimension relating to others is reflected by the theme *closer more meaningful relationship*s, and the PTGI dimension greater appreciation for life is represented in the theme *reappraisal of life and priorities*.

Participants reported discovering *new possibilities* for Christchurch and themselves. For example, participants described practical opportunities such as discovering new career paths for themselves that were viewed as more fulfilling and purposeful, emphasising new roles that came out of the earthquakes. Participants described a desire to pursue a career path that focused on helping people rather than a career that was centred around financial gain. Such changes are linked to participants' reappraisal of priorities, viewing people and their relationships with others as more important. Others who remained in their previous careers described having more interesting and valuable work following the earthquakes. Having the opportunity to help people through their careers was described as particularly meaningful. As such, the earthquakes gave participants the opportunity to be part of something bigger and to work alongside others at a time of need. Additionally, participants in the current study described material opportunities such as rebuilding their homes in new and enjoyable ways and becoming more financially stable. Many participants also described opportunities for Christchurch to be rebuilt in new and exciting ways–something that can be celebrated collectively by people from Christchurch.

Participants described the rebuild of a new city as a chance to reconnect with people, establish a new home and bring life back into the city, emphasising a sense of connection. The Posttraumatic Growth Inventory does not include opportunities or possibilities that may be

shared by others experiencing similar hardship. The current study's findings suggest the addition of a community aspect to the new possibilities domain, whereby growth is not only experienced personally but is also shared among the wider community.

Descriptions of new possibilities that are a result of the earthquakes reflect a sense of open-mindedness and optimism. This is consistent with research indicating that resilient people often focus on positive emotions that enable them to find meaning in difficult circumstances (Ogińska-Bulik & Kobylarczyk, 2016). Identifying new possibilities corresponds with Janoff-Bulman's (2004) and Tedeschi and Calhoun's (2004) growth through adversity theories. Identifying new possibilities after a potentially traumatic event may be related to people's attempts to rebuild their lives and assumptive world views, giving meaning to the experience. People do not have the ability to prevent adversity, however, people do have the freedom to create lives of value and purpose after experiencing hardship (Janoff-Bulman, 2004). Therefore, the identification of new possibilities in the current study can be interpreted as participants actively trying to make meaning from the experience, discovering a new purpose for their lives after being confronted with loss.

This subtheme is consistent with previous findings on posttraumatic growth. One study investigating posttraumatic growth in adolescents who survived cancer found that some of the adolescents reported a desire to become an oncologist to help others struggling with similar illnesses (Zamora et al., 2017). Similarly, women who experienced a traumatic birth reported establishing new career goals such as studying in the fields on nursing, midwifery and child and family health, while others described a desire to volunteer and help other women who experienced traumatic births (Beck & Watson, 2016). The identification of new possibilities in the current study reflects participants seeing the silver lining in circumstances that may appear largely negative. Identifying new possibilities may also prevent the preservation of old roles, strategies and habits, thus helping people to positively accommodate trauma-related

information rather than to assimilate it; this in turn may lead to more growth (Joseph & Linley, 2005). Participants in the current study were not attempting to live life as it once was and reported enthusiasm and courage to pursue new paths, indicating that, for them, change is something to be embraced rather than feared.

The subtheme *reappraisal of life and priorities* reflects participants' realisation of what is most important in their lives. Participants described placing more value on their family, health, safety and their relationships with others and, consequently, viewed material possessions as less important since experiencing the earthquakes. Participants experienced a change in their philosophy of life, reflecting on aspects of their lives that may have been previously overlooked. Additionally, participants described grasping opportunities that come their way and appreciating the smaller aspects of life. Such descriptions were linked to participants acknowledging the frailty of life and their own vulnerabilities. A greater appreciation for life following a potentially traumatic event has been reported by combat veterans (Palmer et al., 2017), cancer patients (Dong et al., 2017), people who have experienced a life-threatening accident (Wu et al., 2016), people who have survived a natural disaster (Fergusson et al., 2014) and people who have lost a loved one (Shakespeare-Finch & Armstrong, 2010). Potentially traumatic experiences during which people are confronted with loss may prompt thoughts around the frailty of life and the importance of appreciating what people still have in their lives and their place in the world.

For example, participants in the current study described that losing their personal belongings, friends and homes made them realise it is people that matter, suggesting that participants in the current study went through a process of rebuilding their inner worldviews. Moreover, participants reported behavioural changes, such as spending more time with family members and less time at work and pursuing careers where there are opportunities to help others, reflecting their new appraisals about what they value. Behavioural changes can be

interpreted as people making external changes that are compatible with internal changes (Smith et al., 2017). Behavioural changes have been argued to reflect 'real' posttraumatic growth (Zoellner & Mercker, 2006). As such, the results of the current study refute theories that suggest posttraumatic growth is an illusion used to reduce distress (Taylor, 1988). Participants in the current study have made changes that are long-lasting, extending beyond the initial event. Behavioural changes have also been reported by people after other traumatic events. People who experienced a traumatic illness made changes such as improving their nutrition and increasing exercise (Morris et al., 2012). People who lost a loved one reported making behavioural changes, such as spending more time with family members (Wu et al., 2016).

Participants in the current study described *positive changes in self-perception*, such as viewing themselves as stronger and more confident to cope with future challenges and adversities, reflecting an increase in self-efficacy following the earthquakes. A sense of achievement such as coping effectively after the earthquakes and thinking logically and practically about their circumstances was linked to participants' descriptions of increased strength. Getting themselves home, having a plan and staying focused showed participants they were more capable than they had previously thought. This corresponds with Janoff-Bulman's (2004) theory of psychological preparedness. When people experience circumstances they perceive as challenging or distressing they may become stronger and better able to cope with other potential difficulties.

Participants in the current study reported becoming more accepting of adversity and life changes, more compassionate towards other people and less worried about things they could not control. Changes in participants' self-perception is consistent with Tedeschi and Calhoun's (2004) model of posttraumatic growth, whereby challenging circumstances may act as a catalyst for positive personal change. It is possible that as people experience and effectively cope with potentially traumatic events, they may be more likely to learn valuable lessons about

life and themselves, leading to growth. Such changes are reported in studies with people who have experienced different types of traumas. Increased personal strength and more compassion for others have been reported by fire fighters (Leykin et al., 2013), combat veterans (Feder et al., 2008) and people who experienced sexual abuse (Guerette & Caron, 2007; Shakespeare-Finch & De Dassel, 2009). Averse events, therefore, can provide opportunities for positive personal growth.

Participants in the current study reported *closer more meaningful relationships* since experiencing the earthquakes. This subtheme included increased intimacy and closeness with partners as a result of getting thorough the hardship together. Other participants described forming new relationships since experiencing the earthquakes and becoming closer with neighbours and work colleagues. These relationships were described as long-term, lasting for several years since the earthquakes. A sense of unity between participants and their work colleagues, partners and neighbours was related in part to helping behaviours during the earthquake sequence. Helping others and receiving support in return created a sense of togetherness, whereby people came together to support each other's needs. This corresponds with research indicating the importance of social support after adversity and how adequate support contributes to posttraumatic growth (Jia et al., 2015; Frazier et al., 2004). The link between social support and posttraumatic growth in the current study will be further discussed in Section 5.1.3. The subtheme *closer more meaningful relationships* is consistent with previous findings on posttraumatic growth. For example, people who experienced the loss of a loved one reported high levels of growth in the relating to others domain (Shakespeare-Finch & Armstrong, 2010).

Similarly, feeling more connected to family members, friends and the community was reported by people who experienced an earthquake (Mohr, 2014) and a motor vehicle accident (Wang et al., 2011). However, closer more meaningful relationships reported in the current

study contrast with reports of posttraumatic growth in this domain by people who have experienced sexual trauma. People who experienced sexual trauma tend to report greater empathy for others facing similar hardship but report lower levels of posttraumatic growth in the connecting with others domain (Frazier et al., 2001). The breakdown within their personal relationships and loss of trust may account for the relatively lower level of growth within this domain. On the other hand, traumatic experiences such as natural disasters and the loss of a loved one may encourage people to connect and focus on their relationships with others. This may be due to the shared experience with others and the profound need for social connection.

Time since the event and posttraumatic growth is an area of research that has received less attention. The current study demonstrates long-term posttraumatic growth, whereby psychologically healthy people who experienced the Canterbury earthquake sequence reported real positive life changes that have been maintained/continued nine years after the earthquakes. This suggests that once these positive experiences are established, they may continue to build over time. There are few studies that have investigated posttraumatic growth over time in populations who have experienced a natural disaster, particularly using qualitative analyses. Findings of the current study are, however, consistent with existing quantitative research that found long-term posttraumatic growth with people who experienced a chronic illness. In a follow-up study, posttraumatic growth was found in breast cancer patients 5-15 years after diagnosis (Lelorain et al., 2010). Greater appreciation for life (87%) and positive changes in the self, such as viewing themselves as more compassionate (87.3%) and stronger (86.3%) was most commonly reported (Lelorain et al., 2010).

Likewise, posttraumatic growth was found in adolescents diagnosed with cancer at six months and approximately two years after baseline assessment, with adolescents reporting greater appreciation for life, better interpersonal relationships and increased strength (Husson et al., 2017). In addition, high levels of posttraumatic growth were found in transplant survivors

nine years after baseline assessment with the highest levels of growth in the domains of greater appreciation for life, new possibilities, increased strength and better relationships (Tallman et al., 2010). These findings are consistent with reports of posttraumatic growth in the current study, indicating that posttraumatic growth can last several years after a potentially traumatic event.

5.1.3 Themes that may facilitate the posttraumatic growth process

The second aim of the current study was to explore themes that may facilitate the posttraumatic growth process. Existing research tends to focus on direct experiences of posttraumatic growth rather than identifying factors that may facilitate the process of growth. Each theme identified in the current study will be explored and compared to theory and research on posttraumatic growth to conceptualise how these themes may facilitate the process of growth in psychologically healthy people.

5.1.3.1 Hardship

Subthemes under the theme *hardship* describe participants' immediate emotional distress and ongoing difficulties following the earthquakes. Emotional distress is included in Calhoun and Tedeschi's model of posttraumatic growth (2004), Janoff-Bulman's posttraumatic growth theory (2004), and Joseph and Linley's (2005) organismic valuing processes theory. In the current study, reports of distress and earthquake related difficulties are described in the themes: *Acknowledge an extraordinary event, awareness of personal hardship, awareness of negative emotion* and *awareness of hardship for others.* The theme *acknowledge an extraordinary event* includes two subthemes that describe participants' perceptions of the earthquakes. The subtheme *magnitude and physical force* describes the intensity of the earthquakes, in which the nature of the earthquakes was described as big, violent and angry. The subtheme *witnessing the aftermath* includes descriptions of the destruction that occurred from the earthquakes. Participants described witnessing collapsed buildings, damaged roads,

injured people and large amounts of liquefaction and often described these events as surreal or not real. Such perceptions of the earthquakes may have contributed to the shattering of worldviews. Prior to the earthquakes, participants may have lived in a world that made sense; one that had some level of structure and order. An uncontrollable event, such as an earthquake, may have shown people that life can be random and unpredictable, conflicting with previously held worldviews (Janoff-Bulman, 2004).

Witnessing the destruction and experiencing the force of the earthquakes may have led people to value their own lives and many aspects of their lives, such as their relationships with others, reflecting the posttraumatic growth subtheme *reappraisal of life and priorities* and *closer, more meaningful relationships*. Additionally, it is possible that descriptions of the earthquakes as "surreal" and "not real" enabled participants to separate themselves from the intensity of the earthquakes (Smith et al., 2017). By perceiving the earthquakes as surreal or not real, participants may have preserved a sense of normality that was interrupted by an event that does not usually occur (Smith et al., 2017). For example, one participant described the earthquake as "Moving in ways that it's not supposed to," reflecting the belief that normality will return. Maintaining a sense that normality will return may have helped participants positively accommodate trauma-related information leading to growth (Joseph & Linley, 2005). Rather than generalising the world as unsafe and threatening, participants demonstrated an understanding that such events can occur but do not last eternally. Such views may have enabled participants to find positive outcomes in challenging circumstances.

The subtheme *awareness of personal hardship* reflects a range of hardships associated with the earthquakes. Commonly, participants reported damage to their homes and possessions, financial and work difficulties, strained relationships with others and difficulties with EQC and insurance companies; many of these hardships were reported as ongoing. It is possible that ongoing or additional adverse events may influence the posttraumatic growth process over

time. Participants in the current study not only reported ongoing earthquake related difficulties but also other non-earthquake related stressors and events. Research has yet to investigate ongoing or additional difficulties after potentially traumatic events and its association with posttraumatic growth. However, research has shown an association between the degree of trauma exposure and posttraumatic growth (Michélsen et al., 2017; Ma et al., 2019). A study investigating posttraumatic growth among people who experienced a tsunami (Michélsen et al., 2017) and an earthquake (Ma et al., 2019), reported high levels of growth if they experienced a combination of exposures, such as loss of a loved one, loss of property and severe injury. In the current study, it is possible that ongoing disruption that is perceived as manageable may have kept participants' ruminative cognitive processes active, thus maintaining posttraumatic growth over the years. Ongoing or additional life events and its association with posttraumatic growth merits further exploration. Furthermore, participants in the current study described experiencing negative emotions in response to what was happening at the time of the earthquakes and in the aftermath of the earthquakes. Shock, distress, fear, anxiety, anger and frustration were common responses to participants' circumstances and earthquake related experiences. As such, the subthemes *awareness of personal hardship* and *awareness of negative emotion* indicate that participants were not downplaying, ignoring or denying the reality of their difficulties.

Theorists have stated that posttraumatic growth is self-deceptive in that it may help to relieve distress in the short-term and may not reflect true signs of growth (Maercker & Zoellner, 2004; Taylor & Brown, 1998). Posttraumatic growth, therefore, has been argued to have an illusionary side, whereby people display wishful or positive thinking to avoid thinking about difficult or distressing circumstances. In the current study, however, it is clear that participants did not deny or ignore the many difficulties faced. Rather, participants acknowledged and processed both positive and negative aspects of the earthquakes. Additionally, participants

reported posttraumatic growth nine years after the earthquake sequence, suggesting that it is unlikely that posttraumatic growth in the current study was a coping strategy used to decrease distress and manage hardship at the time of the earthquakes.

The subtheme *awareness of others' hardships* reflects participants' awareness of the distress and difficulties of those around them. It is possible that witnessing other people's hardships led to posttraumatic growth in the form of *closer more meaningful relationships*, *reappraisal of life and priorities* and *positive changes in self-perception*, such as increased compassion. This is consistent with Joseph and Linley's theory (2005), in which acknowledging others' difficulties may have provided a context for participants to acknowledge their own hardships, thereby contributing to participants' search for personal meaning. Witnessing others' hardships may have encouraged people to reflect positively on their circumstances and to acknowledge their sense of fortune. This may have influenced participants to reflect on their lives, priorities and relationships. This is discussed in more detail in the theme *lucky compared to others* under the discussion heading *optimistic positive appraisal*. In this sense, posttraumatic growth in the current sample may have been experienced vicariously, as a result of indirect traumatic exposure, as well as personally, as a result of direct traumatic exposure.

Vicarious posttraumatic growth has not been studied among people who have experienced a collective traumatic event; however, therapists working with people who have experienced adverse circumstances reported positive changes in their values, priorities, strength and relationships with others (Arnold et al., 2005; Guhan & Liebling-Kalifani, 2011). Therapists, therefore, experienced posttraumatic growth indirectly, whereby the client's emotional distress and trauma story facilitated the experience of growth in therapists. Empathetic engagement has been identified as an important factor for the development of vicarious posttraumatic growth (Manning-Jones, 2015). Participants in the current study

expressed empathy, compassion and concern in response to others who were struggling, and often described wanting to help in some way to relieve others' distress. Empathetic engagement may have helped participants relate to others' distressing experiences, facilitating posttraumatic growth. Participants also reported feeling sadness for people who were struggling, thus increasing emotional and cognitive processes necessary for the experience of growth (Tedeschi & Calhoun, 2004).

5.1.3.2 Optimistic positive appraisal

Subthemes under *optimistic positive appraisal* include themes describing positive cognitions: *Positive sense of self, openness to earthquake related experiences, lucky compared to others, lucky compared to what might have been* and *acceptance*. Although these themes describe earthquake related events in a positive light it is important to note that participants also acknowledged multiple hardships following the earthquakes, demonstrating a balanced appraisal of earthquake related experiences. Theorists have suggested people who acknowledge both negative and positive aspects of trauma are more likely to experience posttraumatic growth (Pals & McAdams, 2004). It is possible that having a balanced appraisal of both positive and negative aspects of the earthquake sequence encouraged participants to engage in reflective cognitive processing leading to the experience of growth. Optimistic positive appraisal in the current study provides examples of the types of cognitions that may influence the posttraumatic growth process in psychology healthy people.

It is suggested that resilient people are more likely to experience positive emotions following adversity, enabling them to find more positive meaning in challenging circumstances (Tugade & Fredrickson, 2004). Resilient people, therefore, may experience growth through different cognitive processes compared with people presenting with psychopathology. The subtheme *positive sense of self* describes participants' sense of self-efficacy, viewing themselves as calm, practical, resilient, strong, self-motivated and optimistic. Participants

described themselves as able to cope with challenging circumstances and viewing themselves as confident in the face of adversity. People with high resilience have been found to have high self-efficacy (Kraaij et al., 2008), and high-self efficacy has been found to be positively associated with posttraumatic growth (Lotfi-Kashani et al., 2014; Yu et al., 2014b). In a study of people diagnosed with cancer, those who believed in their ability to cope with challenging circumstances reported positive changes in their relationships, acknowledged their own strengths and appreciated life in more ways than before (Dong et al., 2017). People with high self-efficacy have also been found to be better able to control negative emotions when confronted with difficult circumstances (Lane et al., 2002). Participants' positive views towards themselves in the current study may have help them cope effectively during and after the earthquakes, demonstrating a sense of control over negative emotions. Participants' high self-efficacy may have influenced them to engage in active coping behaviours, such as helping others, getting themselves home, creating a plan and staying focused on what needed to be done. This in turn, may have encouraged participants to recognise their strengths, thus reflecting the posttraumatic growth theme *positive changes in self-perception*.

Having a positive sense of self, therefore, may influence posttraumatic growth indirectly, whereby people who feel capable engage in effective coping behaviours that, in turn, builds on their personal sense of strength. People who have a sense of self-efficacy may also experience more positive emotions, enabling them to view difficult circumstances positively and thus leading to the experience of growth (Lane et al., 2002). In contrast, people with low self-efficacy are more likely to become preoccupied with negative emotions and less likely to engage in active coping, thus restricting the experience of growth (Lane et al., 2002). This is in contrast to theories suggesting that people who are resilient and acquire a strong sense of self are less likely to experience growth. The current study, therefore, supports the inclusion of

self-efficacy in models of posttraumatic growth. Self-efficacy and its association with posttraumatic growth merits further exploration.

The subtheme *openness to earthquake related experiences* includes descriptions of the earthquakes as awesome, exciting, cool and interesting, while others described finding humour in the experience. It is evident that participants interpreted aspects of the earthquakes as enjoyable rather than entirely distressing, displaying a positive interpretation of the event. Some participants described circumstances following the earthquakes as positive, such as being able to relax, having the chance to have a holiday and experiencing something new every day. These results are consistent with studies showing that people high in resilience are more likely to respond to challenging or distressing events with positive emotions, such as interest and excitement (Tugade & Fredrickson, 2004). Resilient people, therefore, may be more likely to positively reflect on challenging circumstances which may lead to posttraumatic growth. People who are optimistic may also focus on more important aspects of the event and spend less time worrying about circumstances they cannot control (Aspinwall et al., 2001).

Results of the current study are consistent with research showing that people who have high levels of positive emotions have more of a tendency to experience greater appreciation following adversity (Fagley, 2018). This may explain why participants in the current study reported a greater appreciation for their family, friends and experiences. Similarly, viewing challenging circumstances positively was found to be associated with posttraumatic growth in domains of greater appreciation of life and changes in self-perception in firefighters exposed to a range of potentially traumatic events, such as witnessing death and saving human life (Ogińska-Bulik & Kobylarczyk, 2016). Optimism was also found to be associated with positive changes among men experiencing a chronic disease (Kraaji et al., 2008). As such, optimism may facilitate posttraumatic growth through its influence on cognitive processing. Resilient people have also been found to score highly on the personality dimension openness to

experience (Campbell-Sills et al., 2006), and openness to experience has been found to be an important predictor of posttraumatic growth (Wang et al., 2012). It is, therefore, expected that people who are open to new experiences may be more likely to cognitively process challenging events, leading to growth. Participants in the current study displayed a sense of openness by viewing the earthquakes as an experience to be relished and by focusing on positive circumstances, such as having the chance to have a holiday and experiencing something new. Such positive emotions and openness to the experience may have aided participants' ability to discover new possibilities for themselves and for Christchurch – participants displayed an openness towards change. Participants' sense of openness may have also allowed them to interpret themselves differently following the earthquakes, leading to *positive changes in self-perception*. Therefore, people who are open to new experiences may be more inclined to derive a sense of benefit from adversity.

Cognitive processes reflected in the subthemes *lucky compared to others* and *lucky compared to what might have been* may have contributed to the process of posttraumatic growth in psychological healthy people. The uncontrollable nature of the earthquakes may have encouraged participants to positively interpret the event. People may be more likely to view themselves as lucky or display a sense of gratitude after experiencing an event that is perceived as uncontrollable and random (Teigen & Jensen, 2011). On the other hand, people may be more likely to interpret the event negatively if they happened by chance, whereby people may be more likely to think of ways the event could have been prevented (Teigen & Jensen, 2011). Participants in the current study described misfortunes experienced by family, friends and acquaintances, and acknowledged the possibility that a similar fate could have happened to them but fortunately did not. For example, participants viewed themselves as lucky to be alive when others had lost their lives, lucky that their family members were safe when others had lost loved ones, and lucky that the damage to their homes was relatively minor compared to

what others had experienced. Likewise, in the subtheme *lucky compared to what might have been* participants described alternative or near miss events and considered themselves lucky not to have experienced them. It may be that experiencing an uncontrollable event such as natural disasters shift the focus from, "Why did this happen to me" to, "It could have been me," encouraging participants to focus on positive aspects of their circumstances and thus perceiving themselves as lucky. Viewing oneself as lucky compared to others or what could have been may have also reminded people of the reality of death and loss, increasing a sense of vulnerability. A sense of luck and gratitude, therefore, may have facilitated self-examination, leading participants to value their relationships with others and appreciate the external world more than before.

This corresponds with research showing that a sense of luck or gratitude is related to posttraumatic growth, particularly in the domains of greater appreciation of life and relating to others (Greene & McGovern, 2017; Ruini & Vescovelli, 2013). People who viewed themselves as lucky and grateful when reflecting on their circumstances, reported a newfound belief that life and relationships with others are precious and should not be taken for granted (Greene & McGovern, 2017). Such an appraisal of one's circumstances may explain why participants in the current study described valuing their family and friends more than before, having a greater appreciation for life and feeling closer with others around them. Additionally, a sense of luck and gratitude may have influenced participants to search for new possibilities in their lives; such possibilities may not have been possible if circumstances were different. Taken together, the results of the current study support the inclusion of positive cognitions, such as viewing oneself as lucky and a sense of gratitude, in models of posttraumatic growth.

Related to positive cognitive stance, such as perceiving one's circumstances as lucky or being grateful for one's circumstances, the subtheme *acceptance* emerged from the data. In the current study, participants described putting aside the desire for difficult circumstances to be

different and accepting circumstances for how they are. Acceptance was also demonstrated in the form of acknowledging that misfortune can and does happen and having the understanding that such events are part of life. Others demonstrated acceptance by focusing on things that can be controlled, such as their responses and attitudes towards adversity. Previous research has shown that acceptance helps people respond adaptively to negative emotions and thoughts, leading to improved psychological well-being (Campbell-Sills et al., 2006). People who accept difficult circumstances are also more likely to perceive stressful situations in less threatening ways (Ford et al., 2018) and find meaning in challenging circumstances (Vishnevsky et al., 2010). Therefore, people who accept adverse circumstances may be more likely to focus on positive aspects of the experience. For example, acceptance was found to be an important predictor of posttraumatic growth among people who were sexually assaulted (Cole & Lynn, 2011), whereas avoidance of distressing circumstances was found to be associated with low levels of posttraumatic growth (Kashdan & Kane, 2011). Such results suggest that acceptance may have an important role in the posttraumatic growth process. This theme corresponds with Joseph and Linley's (2005) organismic valuing process theory, whereby people strive to integrate new experiences and to positively modify previous worldviews.

Successful accommodation or processing of the event, therefore, involves people accepting reality. By accepting that misfortune can occur at any time and understanding that adverse events are part of life, participants in the current study seem to have cognitively and emotionally processed the trauma-related information. Rather than viewing the world as a threatening place where little can be controlled, participants in the current study chose to focus on aspects of their circumstances they could control, such as their attitudes and behaviours. Such positive interpretations of the event may explain why participants in the current study were able to appreciate their relationships more, acknowledge their strengths and discover new possibilities for themselves. Acceptance requires reflection and letting go of old ways of

viewing the world, the self and others, that, in turn, reduce negative responses and thus, increase the likelihood that positive changes will be experienced (Janoff-Bulman, 2004). In contrast, non-acceptance may lead people to hold onto prior beliefs that are no longer helpful or adaptive, reducing posttraumatic growth. As such, it seems likely that participants in the current study have engaged in cognitive processes that are important for the experience of growth.

5.1.3.3 People helping people

Experiences comprising the theme *people helping people* may have contributed to posttraumatic growth in the current study. Participants described receiving practical and emotional support at the time of the earthquakes and giving emotional and practical support in return. Participants described the actions of other people in positive ways, expressing a sense of appreciation and gratitude towards people who were willing to help. Several studies have shown that adequate levels of social support are positively associated with posttraumatic growth, evidenced by research with people who have experienced sexual assault (Frazier et al., 2004), bereavement (Cadell et al., 2003) and chronic illnesses such as cancer (Danhauer et al., 2013). In contrast, a lack of social support has been found to be associated with distress and poorer adjustment, leading to lower levels of posttraumatic growth (Peter-Hagene & Ullman, 2014). Calhoun and Tedeschi (2004) suggest that people experiencing distressing events gain emotional relief and comfort by self-disclosing challenging experiences. Emotional support and self-disclosure also allow others to witness appropriate responses and more adaptive perspectives and behaviours of others (Calhoun & Tedeschi, 2004). Social support, therefore, allows people to adopt new perspectives and responses that are necessary to modify people's worldviews leading to the experience of growth.

The important role of social support in the posttraumatic growth process corresponds with Joseph and Linley's (2005) organismic valuing processing theory, whereby a social

environment that is responsive to people's needs may facilitate growth. Participants in the current study described a sense of togetherness whereby people gathered to communicate and emotionally support one another. In turn, participants described feeling reassured and cared for at the time of the earthquakes. It is possible that receiving adequate levels of emotional support contributed to participants' experiences of growth. Previous research has shown that people who felt able to talk about their experiences with others and received support, such as reassurance, advice and encouragement, reported high levels of posttraumatic growth (Schroevers et al., 2010). It is possible that a supportive environment provides people with the necessary tools to effectively cope, leading to a sense of competence. For example, participants in the current study often described pulling together and 'making things happen.' It appears participants were encouraging one another to be solution focused and active in their responses. Such responses may have contributed to participants' sense of strength and competence to cope with adversity. Posttraumatic growth, therefore, could be experienced indirectly whereby receiving adequate support leads to more adaptive behaviours and cognitions and thus, posttraumatic growth.

Additionally, some participants described a personal responsibility or need to help others, reflecting a sense of contribution to the larger community. Helping others who were struggling may have facilitated *closer more meaningful relationships* with others. Likewise, protecting others, comforting others and being of service to others, may have facilitated participants' sense of themselves as stronger and more capable after the earthquakes. Not only did participants describe receiving support from the larger community but they also described stepping into a role of their own where they could take action and gain a sense of agency. As such, participants seemed to have engaged in active coping whereby they took control of difficult circumstances to make a stressful situation better (Folkman & Moskowitz, 2004). People who engaged in active coping after an adverse event have been found to report greater

posttraumatic growth and fewer posttraumatic stress symptoms (Dekel et al., 2011; Helgeson et al., 2006). Active coping, therefore, may have helped participants acknowledge their own strengths and capabilities, reflected in the theme *positive changes in self-perception*. It is also possible that being of service to other people rewarded participants and offered them a sense of meaning and purpose. This may explain why participants in the current study described valuing their relationships with others more and discovering new career paths that were of more value. Taken together, receiving adequate support after adversity and having a sense of responsibility or a role may be particularly important for the process of growth.

5.2 Strengths and limitations

The current study has several strengths. Most qualitative and quantitative research investigating posttraumatic growth uses cross-sectional approaches. This has an inherent weakness as this method captures only a snapshot of individual experiences at one point in time. The current study is a follow-up study that captures the personal narratives of people who experienced the Canterbury earthquake sequence nine years after the event and approximately six years after baseline assessment. Investigating posttraumatic growth over time provides further knowledge on the process of growth. The current study also investigated both experiences and processes of posttraumatic growth in psychologically healthy individuals – an area of research that is highly understudied. It is important to study people with different mental health outcomes, positive and negative, particularly when life challenges and potentially traumatic circumstances are experienced universally and thus, the experience of growth is possible for all people. The current study, therefore, provides further evidence of posttraumatic growth in psychologically healthy people, despite theories suggesting resilient people cannot experience posttraumatic growth. This is important, as the overemphasis in existing research on posttraumatic stress symptoms may ignore other possible pathways by which people can

experience growth. The current study, therefore, suggests additional considerations for models of posttraumatic growth.

Furthermore, growth is deeply personal and is experienced differently from person to person. Through qualitative analysis the current study allowed a rich understanding of growth from the perspectives of people who lived through a challenging and distressing event. As such, the current study considered people's unique experiences of growth that may not be captured by standardised measures in nomothetic statistical analyses. The current study considers factors that may facilitate the posttraumatic growth process. Much of the existing research has examined factors associated with growth quantitatively while there is little qualitative research in this area. Qualitative methods can, not only identify cognitive processes that may lead to growth, but can also provide more detail and context for the different ways people find meaning in challenging circumstances. Existing research tends to focus on negative emotions and cognitions after a potentially traumatic event, therefore the current study provides knowledge on positive cognitions that may facilitate posttraumatic growth. The current study, therefore, provides insight for an alternative pathway by which people experience growth – a pathway that considers positive cognitions, interpretations and emotions. The current study also provides knowledge about the wider social and environmental factors that may help facilitate posttraumatic growth. Such factors are often neglected in statistical research. As such the current study allowed the exploration of psychosocial and psychological factors associated with positive change.

Interpretation of the current study's findings should be considered in the context of some limitations. The majority of participants identified as Pākehā or New Zealand European. One participant identified as Māori, one as Asian and six as 'other.' This does not fully reflect the New Zealand population and, therefore, the findings cannot be generalised to other resilient groups in New Zealand. Furthermore, the results may not generalise to other types of trauma

experiences, as the current study focused on the experience of growth in a group of people who lived through a sustained earthquake sequence. The results of the current study, therefore, may be applicable only to people who have experienced natural disasters, rather than the wider population of people who have been through other types of adversities. Participants were assessed nine years after the initial and largest earthquakes and six years after baseline assessment. It is possible that memories of the earthquakes may have been influenced by other life events occurring within that time period, both positive and negative. Participants may, therefore, have been more likely to report posttraumatic growth if other recent life experiences were positive for them. Additionally, coding, identification and development of themes may be prone to inherent bias of the researcher and the subjective nature of qualitative methods. However, steps were taken to reduce subjectivity in the current study, outlined in Section 3.8 'establishing trustworthiness.' Lastly, due to the nature of the study, qualitative methods cannot identify causal relationships. Therefore, factors identified in the current study should be explored in subsequent quantitative studies.

5.3 Clinical implications

The current study has several clinical and practical implications. It is important that health care professionals understand processes of posttraumatic growth to help facilitate growth in people who have experienced adversity. Thematic analysis provided insights about cognitive and psychosocial factors that could be the focus of intervention efforts to facilitate growth among those who have experienced challenging events. The current study's results suggest that intervention programs should not only focus on negative outcomes occurring from adversity but also positive outcomes where people feel that they have changed in positive ways. Further, positive emotions and positive cognitions appear to have a role in the process of posttraumatic growth. Health care providers can create a therapeutic atmosphere, allowing the client to explore the possibility of growth and engage in reflective cognitive processing.

Therapists may help people articulate their experiences and encourage people to identify alternative and more adaptive ways to process difficult circumstances. This in turn, may help facilitate posttraumatic growth in a therapeutic environment. For example, interventions such as positive psychotherapy has been used for people following a potentially traumatic event. Positive psychotherapy aims to increase positive emotion, engagement and meaning, rather than solely targeting depressive symptoms (Karagiorgou et al., 2018). People who received positive psychotherapy reported a range of positive growth-oriented cognitions, such as an increase in personal strength, greater appreciation of life, improved relationships with others and new possibilities (Karagiorgou et al., 2018). Other existing models of therapy, such as Cognitive Behavioural Therapy and Schema Therapy include cognitive processes discussed in the current study. Cognitive Behavioural therapy has been found to facilitate posttraumatic growth in client's, particularly in the domains of new possibilities and personal strength (Zoellner et al, 2011). Therefore, interventions that enhance people's capacity for positive personal change following adversity should be utilised.

It is important to note that the current study does not suggest posttraumatic growth is expected or required of people who have experienced adversity. Rather, where people acknowledge or identify positive aspects of their experiences, this could be further explored and encouraged. Additionally, the current study emphasises how environmental resources, such as support from family, friends and the community are important for the posttraumatic growth process. Therefore, providing opportunities for social interaction where individuals can connect with others and develop relationships is important for society. Psychosocial interventions, for example, may aid in increasing posttraumatic growth by fostering emotional disclosure, cognitive processing and positive appraisals of challenging circumstances (Ramos et al., 2018). Understanding and support from peers who have faced similar hardship may provide the opportunity for positive modelled behaviour and cognitions that can promote the

experience of growth. The results of the current study, therefore, have implications for the delivery of group treatment, such as group Cognitive Behavioural Therapy.

5.4 Conclusion

The current study provides further evidence of long-term posttraumatic growth among psychologically healthy people nine years after the Canterbury earthquake sequence. Growth reported in the current study is consistent with positive changes reported by people with psychological dysfunction. These results are contrary to posttraumatic growth theories suggesting psychologically healthy people cannot experience growth. Posttraumatic growth, therefore, may be a universal human experience rather than an outcome that is achievable only by people presenting with psychopathology. Further research with psychologically healthy populations is required to ascertain this. Moreover, the current study provides insights about cognitive and psychosocial factors that may facilitate growth in psychologically healthy people. Factors identified in the current study should be further explored in subsequent studies. These include the social environment and the role of positive cognitions such as optimism, openness, self-efficacy, acceptance and gratitude on the posttraumatic growth process. The current study suggests that resilient people may have different psychological processes that lead to growth compared to people with psychopathology, meriting further exploration. The findings of the current study also indicate that although life events can be catalysts for change, the event itself is relatively unimportant. Rather, it is how people perceive and cognitively process challenging or distressing events that makes growth a likely experience.

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